

National Research Initiative Competitive Grants Program

FY 2006 Request for Applications

**U.S. Department of Agriculture, Cooperative State Research,
Education, and Extension Service**

**COOPERATIVE STATE RESEARCH, EDUCATION, AND
EXTENSION SERVICE; U.S. DEPARTMENT OF AGRICULTURE**

NATIONAL RESEARCH INITIATIVE COMPETITIVE GRANTS PROGRAM

INITIAL ANNOUNCEMENT

FY 2006 Appropriations. This RFA is being released prior to the passage of the FY 2006 Appropriations Act in response to requests from our applicant community as well as the need to continue to fund critical agricultural research and integrated programs. However, the enactment of the FY 2006 Appropriation Act may not only impact the overall level of funding for the NRI program but the overall research and integrated grant portfolio for FY 2006 as well. Hence, CSREES reserves the right to amend, delete, or otherwise alter any programs. As indicated in the title of this RFA, this is an initial announcement for the NRI program and depending on the FY 2006 Appropriation Act, CSREES may be issuing a supplemental RFA in addition to those already identified in this RFA. Updated information about this RFA will be made available at <http://www.csrees.usda.gov/fo/nri.html>.

CATALOG OF FEDERAL DOMESTIC ASSISTANCE: This program is listed in the Catalog of Federal Domestic Assistance under 10.206.

STAKEHOLDER INPUT: The Cooperative State Research, Education, and Extension Service (CSREES) is requesting comments regarding this request for applications (RFA) from any interested party. These comments will be considered in the development of the next RFA for the program. Such comments will be used to meet the requirements of section 103(c)(2) of the Agricultural Research, Extension, and Education Reform Act of 1998 (7 U.S.C. 7613(c)(2)). This section requires the Secretary to solicit and consider input on a current RFA from persons who conduct or use agricultural research, education and extension for use in formulating future RFAs for competitive programs. Comments should be submitted as provided in the **DATES** portion of this announcement.

Written stakeholder comments should be submitted by mail to: Policy, Oversight, and Funds Management Branch Staff; Office of Extramural Programs; USDA-CSREES; STOP 2299; 1400 Independence Avenue, SW; Washington, DC 20250-2299; or via e-

mail to: RFP-OEP@csrees.usda.gov. (This e-mail address is intended only for receiving comments regarding this RFA and not requesting information or forms.) In your comments, please state that you are responding to the National Research Initiative RFA.

DATES: All applications must be received by close of business (COB) (5:00 p.m. Eastern Time) on the dates indicated at the end of this announcement. Applications received after applicable deadlines will not be considered for funding. Comments regarding this RFA are requested within six months from the issuance of this notice. Comments received after that date will be considered to the extent practicable.

EXECUTIVE SUMMARY: CSREES requests applications for the National Research Initiative (NRI) Competitive Grants Program for fiscal year (FY) 2006 to support (1) high priority fundamental and mission-linked research of importance in the biological, environmental, physical, and social sciences relevant to agriculture, food, and the environment and (2) competitively awarded research, extension, and education grants addressing key issues of national and regional importance to agriculture, forestry, and related topics. In FY 2006, CSREES anticipates that approximately \$180 million will be available for support of this program. Of this amount, no more than 20 percent will be made available to fund integrated projects (see Part I, A.). The remaining funds will be used to fund research projects.

This notice identifies program objectives for research projects and integrated projects. It describes separate eligibility criteria and matching requirements for each type of project, and instructs applicants regarding the submission and review of applications. CSREES additionally requests stakeholder input from any interested party for use in the development of the next RFA for this program.

IMPORTANT INFORMATION REGARDING NRI POLICIES AND PROCEDURES:

******* PLEASE READ *******

FY 2006 Appropriations. This RFA is being released prior to the passage of the FY 2006 Appropriations Act in response to requests from our applicant community as well as the need to continue to fund critical agricultural research and integrated programs. However, the enactment of the FY 2006 Appropriation Act may not only impact the overall level of funding for the NRI program but the overall research and integrated grant portfolio for FY 2006 as well. Hence, CSREES reserves the right to amend, delete, or otherwise alter any programs. As indicated in the title of this RFA, this is an initial announcement for the NRI program and depending on the FY 2006 Appropriation Act, CSREES may be issuing a supplemental RFA in addition to those already identified in this RFA. Updated information about this RFA will be made available at <http://www.csrees.usda.gov/fo/nri.html>.

Change in Eligibility for EPSCoR funds for FY 2006 through FY 2008. For FY 2006 through FY 2008 the states eligible for USDA EPSCoR funding are: Alabama, Alaska, Arkansas, Delaware, Hawaii, Idaho, Kentucky, Louisiana, Maine, Nevada, New Jersey, New Mexico, North Dakota, Oklahoma, South Carolina, South Dakota, Vermont, West Virginia, Wyoming and other entities eligible for USDA-EPSCoR funding. Please note that institutions in Connecticut, New Hampshire, Mississippi, and Rhode Island are not eligible for USDA EPSCoR funding in FY 2006 through FY 2008. Additional information is available in Part II, C., 2 (c).

Organization of the FY 2006 NRI RFA. In FY 2006, all 32 NRI programs are organized within the following 5 Program Clusters: Agricultural Biosecurity; Agricultural Genomics; Agricultural Production and Value-Added Processing; Agroecosystems; and Nutrition, Obesity, Food Safety and Quality. In addition, each Program Description contains long-term (10 year) goals and FY 2006 priorities for research projects and/or integrated research, education, and extension projects. Applicants are strongly encouraged to read the entire Program Description section for additional information relative to their programs of interest. Please note that the NRI has instituted funding limit guidelines for all types of applications. Applicants should consult individual programs for the guidelines that apply to each program and are strongly encouraged to adhere to these funding limit guidelines.

Program Priorities. The FY 2006 priorities for research projects and/or integrated research, education, and extension projects are listed within each program description. It is left to the discretion of the National Program Leader to return applications without review that do not meet the FY 2006 priorities.

Research and Integrated Grants. The FY 2006 NRI RFA invites applications for research grants and integrated research, extension, and education grants. Integrated means to bring together the three components of the agricultural knowledge system (research, education, and extension) around a problem or activity. In FY 2006, the NRI is seeking to support projects that bring together at least two of these components. Eligibility and requirements for matching funds and types of projects differ by application type; thus, applicants are strongly encouraged to read the entire RFA and contact the appropriate National Program Leader with any questions. The NRI will use no more than 20 percent of available funds to support integrated research, extension, and education grants (see Part I, A.); these funds will not be distributed uniformly across all NRI programs.

Identification of Integrated Projects. To aid the National Research Initiative in identifying integrated projects, please designate if project is integrated in the first sentence of the Project Summary (Form CSREES-2003).

Postdoctoral Fellowships. Beginning in FY 2005, the maximum award size for Postdoctoral Fellowships was increased to a total of \$125,000 for two years. See Part II, C., 2 (a) for additional details. Applications must be submitted by the deadline date

indicated for the relevant NRI Program with the appropriate scientific and technical expertise to review the application.

Equipment Grants. Eligibility for equipment grants is open to any degree-granting institution that is not among the most successful universities and colleges in receiving Federal funds for science and engineering research (see Table 1 for a list of institutions that are NOT eligible for equipment grants). See Part II, C.,2 (c) for additional information. Applications must be submitted by the deadline date indicated for the relevant NRI Program with the appropriate scientific and technical expertise to review the application.

Annual Meeting of Awardees. If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget (see Part IV, B., 1., 13.).

Materials on the Internet. Please see Part VIII, F. for a list of NRI materials available on the Internet and instructions on how to access that information.

Letters of Intent. In FY 2006, one NRI program will **require** a Letter of Intent prior to submission of a full application. This program is 51.9 Biology of Weedy and Invasive Species in Agroecosystems. The Letter of Intent will be reviewed for relevance of the project to program goals, and invitations to submit a full application will be issued promptly by the National Program Leader. Applications submitted without prior approval of the Letter of Intent by the National Program Leader will be returned without review.

Changes in formatting of application copies. The original application with the signed cover page should be prepared on one side of the page using standard size (8 1/2" x 11") white paper, an easily readable font (e.g. Arial, Tahoma, Times Roman), one-inch margins, typed or word processed using no type smaller than 12 point font, and single- or double-spaced. The copies of the original application may be submitted as either single-sided or double-sided documents. Please see Part VI, E, I for the number of copies to submit.

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PART I—FUNDING OPPORTUNITY DESCRIPTION

A. Legislative Authority and Background

The authority to support research projects through this program is contained in 7 U.S.C. 450i(b). Under this authority, subject to the availability of funds, the Secretary may award competitive research grants, for periods not to exceed five years, for the support of research projects to further the programs of the USDA.

In FY 2005, Section 710 of the General Provisions of the Consolidated Appropriations Act, 2004 (Pub. L. 108-447) provided CSREES with the authority to use up to 20 percent of the amount made available in the Act for the National Research Initiative Competitive Grants Program (NRI), to carry out a competitive grants program under the same terms and conditions as those provided in Section 401 of the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA) (7 U.S.C. 7621). In FY 2006, CSREES anticipates similar language; however, funding for integrated activities is contingent on the inclusion of the integrated authority in the FY 2006 Appropriations Act and the availability of appropriated funds.

Section 401 of AREERA authorizes the Secretary of Agriculture to establish a research, extension, and education competitive grants program to address critical emerging U.S. agricultural and rural issues related to future food production; environmental quality and natural resource management; farm income; or rural, economic and business and community development policy. In addition the Secretary of Agriculture is authorized to make grants that address priority mission areas related to: (1) agricultural genomics, (2) food safety, food technology and human nutrition, (3) new and alternative uses and production of agricultural commodities and products, (4) agricultural biotechnology, (5) natural resource management, including precision agriculture, and (6) farm efficiency and profitability, including the viability and competitiveness of small and medium-sized dairy, livestock, crop and other commodity operations.

B. Purpose and Priorities

The purpose of the NRI Program is to support research grants and integrated research, extension, and education grants that address key problems of national, regional, and multistate importance in sustaining all components of agriculture (farming, ranching, forestry including urban and agroforestry, aquaculture, rural communities, human nutrition, processing, etc.). Providing this support requires that NRI advance fundamental sciences in support of agriculture and coordinate opportunities to build on these discoveries. Building on these discoveries will necessitate new efforts in education and extension that deliver science-based knowledge to people, allowing them to make informed practical decisions. Hence, the NRI is accepting applications for fundamental research, mission-linked research, and integrated research, extension, and education projects. However, applicants should know that the NRI will use no more than 20 percent of available funds to support integrated projects (see Part I, A.) and that these funds will not be distributed uniformly, but targeted to specific priorities. Targeted priorities for

integrated projects are clearly identified within the detailed descriptions of program offerings (see Part II, E.).

CSREES may also solicit applications for NRI funds through other announcements, including supplemental FY 2006 NRI RFAs, or in conjunction with multiagency programs. Such announcements will be made public in the same manner as this announcement.

The Competitive Programs (CP) unit, CSREES of USDA, administers the NRI. The purpose of the NRI is to support high priority fundamental and mission-linked research and integrated research, extension and education of importance in the biological, environmental, physical, and social sciences relevant to agriculture, food, and the environment. For this purpose, the following definitions apply:

1. Fundamental research

Research that tests scientific hypotheses and provides basic knowledge that enables advances in applied research and from which major conceptual breakthroughs are expected to occur.

2. Mission-linked research

Research on specifically identified agricultural problems that, through a continuum of efforts, provides information and technology that may be transferred to users and may relate to a product, practice, or process.

3. Multidisciplinary projects

Multidisciplinary projects are those (research or integrated) in which investigators from two or more disciplines are collaborating closely. These collaborations, where appropriate, may integrate the biological, physical, chemical or social sciences.

4. Integrated projects

“Integrated” means to bring together the three components of the agricultural knowledge system (research, education, and extension) around a problem or activity. In FY 2006, the NRI is seeking to support projects that bring together at least two of these components and address agricultural problems as described in this RFA.

The programs described herein were developed within the context of the authorized purposes of USDA research, extension, and education, and within the framework of the CSREES Strategic Plan. In addition, the NRI obtains input from Congress, the National Agricultural Research, Extension, Education, and Economics Advisory Board and a number of university, scientific, and agricultural committees and organizations.

The programs that appear in the following table are soliciting integrated project applications in particular in FY 2006:

Code	Program
20.1	Animal Biosecurity Coordinated Agricultural Projects
20.2	Plant Biosecurity
22.1	Agricultural Plants and Environmental Adaptation
23.1	Managed Ecosystems
28.0	Air Quality
31.5	Human Nutrition and Obesity
32.1	Epidemiological Approaches for Food Safety
41.0	Animal Reproduction
42.0	Animal Growth and Nutrient Utilization
43.0	Animal Genome
44.0	Animal Protection
51.9	Biology of Weedy and Invasive Species in Agroecosystems
52.2	Genetic Processes and Mechanisms of Agricultural Plants
66.0	Agricultural Prosperity for Small and Medium-Sized Farms
71.1	Improving Food Quality and Value

PART II--AWARD INFORMATION

A. Available Funding

There is no commitment by USDA to fund any particular application or to make a specific number of awards. Contingent on congressional action, in FY 2006, CSREES anticipates that approximately \$180 million will be available for support of this program. Of this amount, CSREES anticipates that no more than 20 percent will be made available to fund integrated projects (see Part I, A.). The remaining funds will be used to fund research projects.

NRI funds may be used to fund applications submitted to supplementary NRI RFAs and/or solicitations for multiagency programs in which the NRI is participating. No less than 10 percent of the funds available to support research projects will be made available for Agricultural Research Enhancement Awards (excluding New Investigator Awards), and no more than 2 percent will be made available for equipment grants. Further, no less than 30 percent of the funds available to support research projects shall be made available for grants for research to be conducted by multidisciplinary teams, and no less than 40 percent shall be made available for grants for mission-linked systems research.

B. Types of Applications

In FY 2006, applications may be submitted to the NRI Program as one of the following four types of requests:

1. New application

This is a project application that has not been previously submitted to the National Research Initiative. All new applications will be reviewed competitively using the selection process and evaluation criteria described in Part V—Application Review Requirements.

2. Renewal application

This is a project application that requests additional funding for a project beyond the period that was approved in an original or amended award. Applications for renewed funding must contain the same information as required for new applications and additionally must contain a Progress Report (see Project Description, Part IV, B., 1., 6.(2) under Integrated and Standard Research Grant Applications). Renewal applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in the appropriate area to which they are assigned, and will be reviewed according to the same evaluation criteria as new applications.

3. Resubmitted application

This is an application that had previously been submitted to the National Research Initiative but was not funded. Project Directors (PDs) must respond to the previous review panel summary (see Response to Previous Review, Part IV, B., 1., 5. under Integrated and Standard Research Grant Applications). Resubmitted applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in the appropriate area to which they are assigned, and will be reviewed according to the same evaluation criteria as new applications. The revised application should clearly indicate the changes that have been made in the proposed project. Applications which appear to be resubmissions (regardless of the designation) are regarded as such by the Program and the panel, and compete on the same basis with all other applications (new, renewal, and resubmissions) submitted to the program at the same time.

4. Resubmitted renewal application

This is a project application that requests additional funding for a project beyond the period that was approved in the original or amended award and that had previously been submitted for renewal to the NRI Program but was not approved. Therefore, PDs must provide a Progress Report as required under the Project Description, Part IV, B., 1., 6., (2) under Integrated and Standard Research Grant Applications), and must respond to the previous review panel summary as required under Response to Previous Review, Part IV, B., 1., 5. under Integrated and Standard Research Grant Applications. Resubmitted renewal applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in the appropriate areas to which they are assigned, and will be reviewed according to the same evaluation criteria as new applications.

C. Project Types

For applications proposing research projects, support will be provided through Standard Research Grants, Conferences, Postdoctoral Fellowships, New Investigator Awards, and Strengthening Awards.

In FY 2006, applications are being solicited for the project types:

1. Conventional projects

(a) Standard Research Grants

Research will be supported that is **fundamental** or **mission-linked**, and that is conducted by **individual** investigators, co-investigators within the same discipline, or **multidisciplinary** teams.

A new type of standard award was introduced in FY 2004, the Coordinated Agricultural Project (CAP) award. Applications for CAP awards will only be solicited by a very limited number of programs. CAP awards support large-scale, multi-million dollar projects to promote collaboration, open communication and the exchange of information; reduce duplication of effort; and coordinate activities among individuals, institutions, States, and regions. Project participants serve as a team that conducts targeted research in response to emerging or priority area(s) of national need. Applications articulate how a CAP will complement and/or link with existing programs or projects at the national level. A research CAP project contains the needed science-based expertise, as well as expertise from principal stakeholders and partners to accomplish project goals and objectives. Applications outline the potential of the project, the structure, coordination, and plan of implementation; and propose several research areas that will be evaluated during the study period.

In FY 2006, CSREES plans to award the second or third increment of funding to existing CAP grantees with approved project periods of 2-4 years if satisfactory progress has been achieved on the project. CAP awards are typically made as continuation grants. A continuation grant is a grant instrument by which the Department agrees to support a specified level of effort for a predetermined project period with a statement of intention to provide additional support at a future date, provided that performance has been satisfactory, appropriations are available for this purpose, and continued support would be in the best interest of the Federal government and the public.

(b) Conferences

Scientific meetings that bring together scientists to identify research education or extension needs, update information, or advance an area of science are recognized as integral parts of scientific efforts. Support for a limited number of such meetings covering subject matter encompassed by this solicitation will be considered for partial or, if modest, total support. Conference awards are not expected to exceed \$10,000 and are

not renewable. These applications should be submitted by the deadline date for the appropriate program described under Part II, E., Program Opportunities. Applicants considering submitting conference applications are strongly advised to consult appropriate NRI staff before preparing their applications.

2. Agricultural Research Enhancement Awards (AREA)

To contribute to the enhancement of research capabilities in the research programs described herein, applications are solicited for Agricultural Research Enhancement Awards (AREA). These awards are designed to help institutions develop competitive research programs and to attract new scientists into careers in high-priority areas of national need in agriculture, food, and environmental sciences. The AREA program provides support for Postdoctoral Fellowships, research awards for New Investigators, and Strengthening Awards. Specific eligibility requirements for these awards are described below. Applications submitted by non-United States organizations will not be considered for support. However, United States citizens applying as individuals for Postdoctoral Fellowships may do all or part of the proposed work at a non-United States organization.

(a) Postdoctoral Fellowships

Individuals who have recently received or will soon receive their doctoral degree are encouraged to submit applications. **These applications may be submitted either directly by the individual or through the mentor's institution. The postdoctoral applicant must be the sole PD listed on the application.** The following requirements apply: (1) the doctoral degree must be received after January 1, 2003, and by June 15, 2006; (2) the individual must be a citizen of the United States; (3) the application must contain (A) documentation that arrangements have been made with an established investigator to serve as mentor; (B) documentation that arrangements have been made for the necessary facilities, space, and materials for conduct of the research; and (C) documentation from the host institution's authorized organizational representative (AOR) indicating that the host institution concurs with these arrangements; and (4) the research proposed must be solicited in and directly submitted to a program described under Part II, E., Program Opportunities, in this document. Although a proposed project may fit in the context of the mentor's existing research area, projects are specifically solicited that initiate the postdoctoral student's independent research program, rather than serve as extensions of ongoing projects in the mentor's laboratory. Postdoctoral awards are limited to a total award of \$125,000 and two years duration and are not renewable. Funds should be requested primarily for salary support, although other expenditures (e.g., supplies, travel, and publication) are allowable costs if properly justified. Either an institutional allowance (not to exceed \$2,400/year) or indirect costs may be requested within the \$125,000 maximum award limit. **Applications should be submitted to the appropriate research program described in this solicitation by the designated deadline for that particular program. A separate peer review panel will not be assembled to review these applications.**

An institution may provide compensation for non-research services. Compensation for services is not considered stipend supplementation. However, it is expected that compensated services will occur on a limited, part-time basis apart from the normal postdoctoral research activities, which require a minimum of 40 hours per week. Under no circumstances may the conditions of stipend supplementation or the services provided for compensation interfere with, detract from, or prolong the fellow's 2-year approved NRI postdoctoral fellowship.

Applicants are urged to contact program staff concerning questions related to eligibility, budget, and similar matters.

(b) New Investigator Awards

A new investigator is one who is beginning his/her research career, does not have an extensive research publication record, and has less than 5 years postgraduate, career-track research experience. The new investigator may not have received competitively awarded Federal research funds beyond pre- or postdoctoral research awards. The application must contain documentation that lists all prior Federal research support. **The PD and all co-PDs must meet all of the New Investigator eligibility requirements as described within this section. Research colleagues who do not meet eligibility requirements should be designated only as collaborators and should not be listed on the Proposal Cover Page (Form CSREES-2002).** Applications may be submitted by any State agricultural experiment station, college, university, other research institution or organization, Federal agency, national laboratory, private organization, corporation, or individual. Applications submitted by non-United States organizations will not be considered for support. The research proposed shall be appropriate to a program described under Part II, E., Program Opportunities, and **the application must be submitted directly to that program by the designated deadline date.** A separate peer review panel will not be assembled to review these applications.

(c) Strengthening Awards

Strengthening Awards consist of Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, Seed Grants, and Strengthening Standard Research Project Awards. **The NRI particularly encourages applications for Research Career Enhancement Awards (Sabbatical Awards).** All applications submitted for Strengthening Awards, in addition to fulfilling the requirements in this part, must be appropriate to one of the programs described under Part II, E., Program Opportunities.

Research Career Enhancement Awards, Equipment Grants, Seed Grants, and Strengthening Standard Research Project Awards will be available to ensure that (a) faculties of small and mid-sized academic institutions that are not among the most successful universities and colleges for receiving Federal funds for science and engineering research (see Table 1. at the end of this document for an alphabetical listing of the most successful institutions) and (b) PDs at institutions eligible for USDA EPSCoR (Experimental Program for Stimulating Competitive Research) funding receive

a portion of the grants. When determining eligibility for these grant types, the following definitions apply:

(1) Small and mid-sized institutions are academic institutions with a current total enrollment of 15,000 or less including graduate and undergraduate and full- and part-time students. (Applicants applying under this category should indicate the current total enrollment of the institution in a cover letter.) An institution in this instance is an organization that possesses a significant degree of autonomy.

(2) Limited institutional success means institutions that are **not** among the most successful universities and colleges for receiving Federal funds for science and engineering research. See Table 1. at the end of this document for an alphabetical listing of the most successful institutions.

Every 3 years the NRI determines which states are eligible for USDA EPSCoR funding by calculating the states which have had a funding level from the NRI no higher than the 38th percentile of all states, based on total funding for the previous three-year period (excluding strengthening set-aside funds). For FY 2006, the following States fall into this category:

Alabama	Alaska	Arkansas	Delaware	Hawaii
Idaho	Kentucky	Louisiana	Maine	Nevada
New Jersey	New Mexico	North Dakota	Oklahoma	South Carolina
South Dakota	Vermont	West Virginia	Wyoming	

Other entities eligible for **USDA-EPSCoR** funds in FY 2006 include the following United States commonwealths, territories, possessions and their successors and the District of Columbia:

American Samoa	District of Columbia	Guam	Micronesia
Northern Mariana Islands	Puerto Rico	Virgin Islands of the U.S.	

All applicants for Strengthening Awards must meet the criteria described herein for the type of award for which the applicant applies. **An individual applicant may submit only one strengthening application (Research Career Enhancement Awards, Equipment Grants, Seed Grants) as PD or co-PD this fiscal year.** The PD and **all** co-PDs must meet **all** Strengthening eligibility requirements as described in these guidelines.

Research Career Enhancement Awards, Equipment Grants, Seed Grants, and Strengthening Standard Research Project Award applications shall be appropriate to a program described under Part II, E., Program Opportunities, and the application must be submitted directly to that program by the designated deadline date. A separate peer review panel will not be assembled to review these applications.

Investigators are encouraged to contact the National Program Leader of the appropriate program described in Part II, E., Program Opportunities, regarding questions about suitability of research topics or research topics for which equipment would be used and to verify eligibility.

See Part IV, B., 3., (c) for detailed instructions regarding what to submit for a particular type of strengthening award.

In addition to being appropriate for and submitted to one of the program areas described under Part II, E., Program Opportunities, applications for Strengthening Awards must fit within one of the following specified areas:

Research Career Enhancement Awards (Sabbatical Awards)

The purpose of these awards is to provide an opportunity for faculty to enhance their research capabilities by funding sabbatical leaves. CSREES also encourages and will support the concept of “mini-sabbaticals” for faculty desiring short-term training to learn new techniques that will improve their competitiveness. These short-term training opportunities generally follow all of the sabbatical items described below but with a shorter duration. These awards also could be used to participate in short courses offered at various research institutions. These awards will be limited to individual faculty who have appointments at small and mid-sized degree-granting institutions that previously have had limited institutional success and to faculty who have appointments at degree-granting institutions eligible for USDA-EPSCoR funding. The proposed PD may not have served as a PD on an NRI grant within the past five years (including Seed Grants, Research Career Enhancement Awards, and Postdoctoral Fellowships but excluding Equipment Grants).

Collaborative arrangements are encouraged; however, research colleagues who do not meet eligibility requirements may only serve as collaborators and should not be listed on the Proposal Cover Page (CSREES-2002).

The sabbatical description must include the research interests and goals of the PD, the research project to be pursued while on sabbatical leave, an indication of how the sabbatical leave will enhance the research capabilities of the PD, and a statement of future research goals and how the sabbatical will enable the PD to pursue these goals. A letter detailing the particulars of the arrangement with the home institution (e.g., dates and duration of sabbatical and salary arrangements) and a letter of support and intent from the established investigator who will be the host are to be included in the application. The host's letter is to provide assurance that all facilities and space necessary for conduct of the research will be available. Awards will be limited to one year of salary and funds for travel and supplies. These awards are not renewable. **Use the program code for an appropriate program in Box 8 of the Proposal Cover Page (Form CSREES-2002) and check the “Career Enhancement” box on the Project Summary (Form CSREES-2003).**

Equipment Grants

Funds will be designated for equipment grants to strengthen the research capacity of institutions. Only degree-granting institutions that are not among the most successful universities and colleges for receiving Federal funds for science and engineering research may apply (see Table 1. for the most successful institutions).

Each request shall be limited to one major piece of equipment within the cost range of \$10,000-\$250,000. The amount requested shall not exceed 50 percent of this cost or \$50,000 whichever is less. Unless waived, it is the responsibility of the PD to secure the required matching funds with non-Federal funds. A letter(s) from the organization(s) committed to providing the remaining non-Federal funds must be included in the application. The requirement for matching funds may be waived if the award is to a college, university, or research foundation maintained by a college or university that ranks in the lowest one-third of such colleges, universities, and research foundations on the basis of Federal research funds received (see Table 2 for a list of institutions that are eligible for waiver of matching funds for equipment grants) and if the equipment to be acquired costs not more than \$25,000 and either has multiple uses within a single research project or is useable in more than one research project.

No installation, maintenance, warranty, or insurance expenses may be paid from these awards, nor may these costs be part of the matching funds. Indirect costs are not permitted on Equipment Grant Awards.

A description of the research project(s) for which the equipment will be used and how the equipment will fit into or enhance the research program and allow the applicant(s) to become more competitive for future funding is required. A description of similar or complementary equipment available to the PD and why the requested equipment is necessary is also required. PDs are encouraged to provide evidence of institutional commitment for operation and maintenance of requested equipment. Arrangements for sharing equipment among faculty are encouraged; however, it must be evident that the PD is a principal user of the requested equipment. These awards are not intended to replace requests for equipment in individual research projects. Rather, they are intended to help fund items of equipment that will upgrade research infrastructure. Requests for computer equipment are allowed only if the equipment is to be used in activity integral to the proposed project; requests for computer equipment will not be permitted if the equipment will primarily serve as a word processor or perform administrative functions.

Use the program code for an appropriate program in Box 8 of the Proposal Cover Page (Form CSREES-2002) and check the “Equipment” box on the Project Summary (Form CSREES-2003).

Seed Grants

The purpose of these awards is to provide funds to enable investigators to collect preliminary data in preparation for applying for a Standard Research Grant. These

awards will be limited to faculty with appointments at small and mid-sized degree-granting institutions that have had limited institutional success and to faculty with appointments at degree-granting institutions eligible for USDA-EPSCoR funding. In order to be eligible, a proposed PD may not have served as PD on an NRI grant within the past 5 years (including Seed Grants, Research Career Enhancement Awards, and Postdoctoral Fellowships but excluding Equipment Grants). All PD *and* co-PDs must meet all eligibility requirements for Strengthening Awards. **PLEASE NOTE:** A PD or co-PD of a Seed Grant may not serve as a PD or co-PD on another Seed Grant within 5 years of the initial Seed Grant. Research colleagues who do not meet eligibility requirements may only serve as collaborators and should *not* be listed on the Proposal Cover Page (Form CSREES-2002). These awards will be limited to a total of \$100,000 (including indirect costs) for 2 years and are **not renewable**. Applications for seed grants are expected to indicate how the research will enhance future competitiveness of the PD in applying for Standard Research Grants. Also, awards are not intended to fund stand-alone research projects but rather projects that will lead to further research applicable to one of the research areas in the NRI.

Strengthening Standard Research Project Awards

These awards will be limited to faculty with appointments at small and mid-sized degree granting institutions that have had limited institutional success and to faculty with appointments at degree granting institutions eligible for USDA-EPSCoR funding. PDs may not have served as a PD on an NRI grant (**excluding Seed Grants, Research Career Enhancement Awards, Equipment Grants, and Postdoctoral Fellowships**) within the past 5 years. All PD **and** co-PDs must meet all eligibility requirements for the Standard Strengthening Research Project Awards Program. Research colleagues who do not meet eligibility requirements may only serve as collaborators and should **not** be listed on the Proposal Cover Page (Form CSREES-2002).

Flow Chart for Strengthening Eligibility

A flow chart for determining eligibility for Strengthening Research Awards is included as Figure 1. at the end of this document.

The project subject for any Strengthening Award must be appropriate to a program described under Part II, E., Program Opportunities, in this document. A separate peer review panel will not be assembled to review these applications.

3. Integrated projects

(a) Integrated Project Grants

Integrated project applications may involve any combination of research, education, and extension activities, with the provision that every project must include at least two of the three stated components (i.e., research, education, and extension) required for integration as defined in Part VIII, H. Integrated project applications may include, for example,

institutions that conduct research; synthesize previous research; develop curricula and build educational and research capacity; and transfer information to producers, end users, and the public. The type and number of participating institutions should be appropriate to the project proposed, and should include all participants necessary for successful completion of the projects. Integrated projects are expected to generate new knowledge and/or apply existing knowledge quickly through outreach and the dissemination of information on specific issues in agriculture and food systems where results may be visible over the short term.

Dependent on the merits of applications received, CSREES will ensure that a portion of project grants will be awarded to applications in which the lead institutions (recipient of the Federal funds) are small, mid-sized, and minority-serving institutions. When determining eligibility for these grant types, the following definitions apply:

(1) Small and mid-sized institutions are academic institutions with a current total enrollment of 15,000 or less including graduate and undergraduate and full- and part-time students and that are no higher than the 50th percentile of academic institutions funded by the National Research Initiative Competitive Grants Program in the past three years and are not within the top 100 Federally funded institutions (See Table 2. at the end of this document for an alphabetical listing of the most successful institutions). Applicants applying under this category should indicate the current total enrollment of the institution in a cover letter. An institution in this instance is an organization that possesses a significant degree of autonomy.

(2) Minority-serving institution means an academic institution whose enrollment of a single minority group or a combination of minority groups (as defined in Part VIII, H.) exceeds 50 percent of the total enrollment, including graduate and undergraduate and full- and part-time students. Applicants applying under this category should indicate the current percentage of applicable minority students enrolled at the institution in a cover letter. An institution in this instance is an organization that possesses a significant degree of autonomy.

Other institutions or organizations involved in small- and mid-sized institution eligible projects or minority-serving institution eligible projects need not meet the criteria described in the definitions for small- and mid-sized institution or minority-serving institutions.

Another type of integrated project grant is the Coordinated Agricultural Project (CAP) award. Applications for CAP awards will only be solicited by a very limited number of programs. CAP awards support large-scale, multi-million dollar projects to promote collaboration, open communication and the exchange of information; reduce duplication of effort; and coordinate activities among individuals, institutions, States, and regions. Project participants serve as a team that conducts targeted research, extension, and education in response to emerging or priority area(s) of national need. Applications articulate how a CAP award will complement and/or link with existing programs or

projects at the National level. An integrated research, extension, and education CAP project contains the needed science based expertise, as well as expertise from principal stakeholders and partners to accomplish project goals and objectives. Applications outline the potential of the project, the structure, coordination, and plan of implementation; and propose several research, extension, and education areas that will be addressed during the study period.

In FY 2006, CSREES plans to award the second or third increment of funding to existing CAP grantees with approved project periods of 2-4 years if satisfactory progress has been achieved on the project. A continuation grant is a grant instrument by which the Department agrees to support a specified level of effort for a predetermined project period with a statement of intention to provide additional support at a future date, provided that performance has been satisfactory, appropriations are available for this purpose, and continued support would be in the best interest of the Federal government and the public.

(b) Bridge Grants

Bridge grants are designed to assist small, mid-sized, and minority-serving institutions that have not previously been successful in obtaining competitive grants under subsection (b) of the Competitive, Special, and Facilities Research Grant Act (7 U.S.C. 450i(b)) (i.e., NRI) in order to sustain and enhance important collaborations and activities that might lead to future program success or success in obtaining other grants. A flow chart for determining applicant eligibility for bridge grants is included as Figure 2. at the end of this document. Institutions eligible for bridge grants will be considered for up to \$100,000 if an Integrated Project Grant application is considered meritorious but ranks below the funding cutoff during the peer review process.

Applicants may not apply directly for bridge grants. Bridge grants will be awarded only to eligible small- and mid-sized institutions and minority-serving institutions (as defined under 3(a), above) which are **not** among the most successful universities and colleges for receiving Federal funds for science and engineering research. See Table 2. at the end of this document for an alphabetical listing of the most successful institutions. Awards will be made after peer review of an integrated project grant application places the application below the funding cutoff. Applicants in this category should indicate whether the institution qualifies as a small, mid-sized institution or a minority-serving institution (see Part VIII, H.) and include the documentation requested in II.C.3(a)(1) or II.C.3(a)(2), as applicable.

D. The NRI and CSREES Strategic Planning

The NRI is moving to address priorities that support the objectives and goals identified in the CSREES Strategic Plan (http://www.csrees.usda.gov/about/offices/pdfs/strat_plan_04_09.pdf). The CSREES plan has the following goals:

1. Enhance economic opportunities for agricultural producers;
2. Support increased economic opportunities and improved quality of life in rural America;
3. Enhance protection and safety of the Nation's agriculture and food supply;
4. Improve the Nation's nutrition and health; and
5. Protect and enhance the Nation's natural resource base and environment.

The CSREES plan is compatible with the goals of the USDA Strategic Plan and is a dynamic working document that evolves in response to changes in national needs. Decisions about NRI priorities are also informed by stakeholder input, congruence with Presidential initiatives, and two recent reports from the National Academy of Sciences' Board on Agriculture (2001 and 2002). These priorities are further designed to address the purposes of Section 401 of AREERA including all statutorily-identified critical emerging agricultural and rural issues, and priority mission areas (see Part I, A.).

E. Program Opportunities

Please note that CSREES offers a number of programs that support research, education, and extension, or a combination thereof. Included in these offerings are the Integrated Research, Education, and Extension Competitive Grants Program, and other programs that deal with food safety, biotechnology risk assessment, and higher education. These programs provide funding for many topic areas related to, but not duplicative of, NRI programs. Applicants are encouraged to examine other CSREES program descriptions to find the most appropriate source of funding. Eligibility for these programs is noted in each RFA. RFAs can be accessed through the Agency's Web site (<http://www.csrees.usda.gov/fo/funding.cfm>).

The following specific program opportunities are provided as a base from which applications for Standard Projects, AREA, and Integrated Projects can be developed. These descriptions provide boundaries on the scope of each individual program. The NRI encourages submission of innovative projects that are "high-risk," as well as innovative applications with potential for more immediate application.

For research addressing biological issues, agriculturally important organism(s) should be used to accomplish the research objectives. The use of other organisms as experimental model systems **MUST** be justified relative to the goals of the appropriate research program.

***Note to multidisciplinary research teams:** The NRI recognizes the value of research performed as a team effort and recommends the following be taken into consideration when assembling a project team and developing an application for funding. To be competitive, the number of objectives and the level of personnel involved in the*

application should be appropriate to the NRI program and to the activities proposed. A clear management strategy should be provided which identifies the contribution of each member of the team.

AGRICULTURAL GENOMICS PROGRAM CLUSTER

The Agricultural Genomics program cluster addresses CSREES strategic goals *to enhance economic opportunities for agricultural producers* and *to enhance the protection and safety of the Nation's agriculture and food supply*.

Agricultural Genomics addresses these goals by increasing the understanding of the biological role of gene sequences and gene expression in economically important animals, insects, microbes and plants. Advances in genetic technology will enable improvements in the quality of agricultural commodities and products and the realization of more efficient and sustainable production practices.

Public investment in genome sequencing of agricultural species will result in the following outcomes for agricultural systems:

- Streamlined delivery of new or improved traits of commodities, including increased efficiency of breeding or selection programs;
- Discovery and enhancement of innate properties of agriculturally important organisms;
- Improved animal and plant production and protection; and
- Reduced impacts of agriculture on the environment (e.g., reduced water and air pollution, decreased harmful pesticide and fertilizer applications, decreased use of antibiotic and growth promoters).

In FY 2006, the NRI invites applications in the following programs related to Agricultural Genomics:

23.2 Microbial Genome Sequencing

23.3 Microbial Observatories

43.0 Animal Genome

45.0 Functional Genomics of Agriculturally Important Microorganisms

51.3 Suborganismal Biology and Genomics of Arthropods and Nematodes

52.1 Plant Genome

Data Release

All applications to programs in this cluster should include a plan for timely dissemination of information and deliverables to a clearly identified community of users, as well as to the scientific community as a whole. In addition to the scientific plan, applications should include a clear, complete and workable plan for sharing results and management of intellectual property. The plan should be specific about the nature of the results to be shared, the timing and means of release, and constraints on release. Sequences (e.g.,

BAC end-sequencing, EST, cDNA libraries, etc.) must be released according to currently accepted community standards (e.g., Bermuda and Fort Lauderdale agreements, if applicable, see <http://www.genome.gov/page.cfm?pageID=10506537>) to public databases (GenBank if applicable, see <http://www.ncbi.nlm.nih.gov/Genbank/index.html>) as soon as their quality is checked. Applicants proposing microarray studies should include a statement addressing Minimum Information about Microarray Experiment compliance (MIAME if applicable, see <http://www.mged.org>). If the proposed project produces community resources (e.g., biological materials, germplasm, software, etc.), it is strongly encouraged that these resources be made publicly available as soon as their quality is verified. The resources produced must be available to all segments of the scientific community, including industry. The description should be specific and describe what, how, and when the community would have public access to the outcome of the project. This is particularly important for the projects that will produce tangible research tools and resources.

AGRICULTURAL GENOMICS PROGRAMS

23.2 Microbial Genome Sequencing

Investigators are encouraged to contact Dr. Ann Lichens-Park, National Program Leader, at (202)401-6460 regarding questions about suitability of research topics (or at apark@csrees.usda.gov to arrange a telephone consultation). Most awards in this program range between \$100,000 and \$2.5 million (including indirect costs) for research projects for project periods of 2-3 years. The total amount of support available for this program from CSREES will be approximately \$5 million.

CSREES, in partnership with the National Science Foundation, offers a competitive grants program supporting high throughput sequencing of the genomes of a wide range of microorganisms (including viruses, bacteria, archaea, fungi, oomycetes, protists and agriculturally important nematodes) that are either of fundamental biological interest, are important to the national interest, to the productivity and sustainability of agriculture and forestry, or to the safety and quality of the Nation's food supply. The results will be partial or whole genome sequence data, annotation and mapping information. Applicants are encouraged to incorporate teaching, training, or outreach components within the scope of the project to facilitate the dissemination of knowledge and the education of students and the public. Additional information regarding this program will be released in a separate request for applications. Please visit <http://www.csrees.usda.gov/fo/microbialgenomesequencingnri.html>.

23.3 Microbial Observatories

Investigators are encouraged to contact Dr. John L. Sherwood, National Program Leader, at (202) 690-1659 regarding questions about suitability of research topics (or at jsherwood@csrees.usda.gov to arrange a telephone consultation). Grants for this

*program are expected to range between \$500,000 and \$2,000,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available from both NSF and USDA-CSREES for this program will be approximately \$4.5 million, of which approximately \$2.0 million will be provided by USDA-CSREES. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, October 27, 2005.*

Microorganisms are critical to the productivity and sustainability of agricultural ecosystems. They can be detrimental (e.g. by causing disease) or beneficial (e.g. by reducing the incidence of disease or by contributing to nutrient cycling). Methods of managing agricultural systems can significantly impact microbial community composition and functioning. Very little is currently known about the extent and significance of such impacts.

CSREES, in partnership with the National Science Foundation, announces an expanded competitive grants program on Microbial Observatories. This program will now support research to discover and characterize novel microorganisms and microbial communities and to study their roles in agriculturally relevant environments. Additional information regarding this program has been released as a separate program announcement. Please visit: www.csrees.usda.gov/fo/microbialobservatoriesnri.html.

43.0 Animal Genome

*Investigators are encouraged to contact Dr. Peter J. Burfening at (202)401-5823 or Dr. Muquarrab Qureshi, at (202)401-4895, National Program Leaders, regarding questions about suitability of research topics and integrated activities (or at pburfening@csrees.usda.gov or mqureshi@csrees.usda.gov to arrange a telephone consultation). The total amount of support available for this program will be approximately \$12 million with approximately \$1.5 million for integrated projects and \$10.5 million for research projects. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, June 15, 2006.*

Overview

The Animal Genome program provides science-based knowledge and technologies to generate new or improved high-quality products/processes and to promote the efficiency of agricultural production systems. This information will also enhance protection and safety of the Nation's agriculture and food supply through development and delivery of information/technologies to genetically improve animals of agricultural importance. The result will be a reduction in the number and severity of animal disease outbreaks and a decreased dependence on the widespread use of antibiotics. This information will also contribute to protection and enhancement of the Nation's natural resource base and environment by increasing productivity while minimizing environmental consequences.

To meet these identified needs of agriculture, the long-term (10 year) goal for this program is to: identify candidate genes for economically important traits that can be

quickly tracked, monitored or manipulated to improve animal health, product quality, and production efficiency.

The Animal Genome program has four program elements: Applied Animal Genomics, Tools and Resources, Bioinformatics, and Functional Genomics.

43.0A ANIMAL GENOME: APPLIED ANIMAL GENOMICS

Background

Applications should be developed with applied goals in mind, including acceleration of animal breeding, mapping and deployment of quantitative trait loci and markers in breeding programs, and molecular identification of beneficial alleles of any particular gene of agricultural significance.

FY 2006 Priorities for Research

- 1) Identification and mapping of molecular markers, including quantitative-trait loci (QTL) and economic trait loci (ETL) of importance to animals in agriculture, including aquaculture species.
- 2) SNP based, cost-effective genotyping as it relates to animal identification and genetic diversity; and
- 3) Development and application of methods to modify the animal genome (e.g., nuclear transfer, embryonic stem cells and transgenics).

FY 2006 Priorities for Integrated Activities (those that combine research, education, and/or extension)

- 1) Manipulation and management of the animal's genome through the use of molecular markers, including quantitative-trait loci (QTL), economic trait loci (ETL) and SNP of importance for animals of agricultural importance to improve animal health, product quality and/or production efficiency.

The total amount of support available for the Applied Animal Genomics program element will be approximately \$3 million. The program element plans to make 8 to 10 awards of up to \$450,000 each (including indirect costs) for up to 3 years in duration for research projects and up to \$550,000 (including indirect costs) for integrated projects for up to 4 years in duration.

Other Key Information - Applied Animal Genomics

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs

to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.

- All model systems (especially the use of laboratory animals, cell cultures, etc.) must be thoroughly justified in terms of the program guidelines and relevance to U.S. animal agriculture. This program will no longer accept applications whose studies primarily utilize non-agricultural or non-aquacultured species as animal models.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

43.0B ANIMAL GENOME: TOOLS AND RESOURCES

Background

The Tools and Resources program element will emphasize the development of basic tools and resources to accelerate research in agricultural animal genomics. The goal is to develop state-of-the-art tools and resources that will advance the understanding of animal genomes in terms of organization and function.

FY 2006 Priorities for Research

- 1) The generation of EST libraries and targeted genome sequences for animals of agricultural importance including aquaculture species where either the whole genome sequence is not available or EST libraries do not exist;
- 2) Generation of comparative maps (contig maps and high density linkage maps) for use in comparative genomics; and
- 3) Development of high density SNP maps where these do not already exist.

The total amount of support available for the Tools and Resources program element will be approximately \$1.5 million. The program element plans to make 1 or 2 awards of up to \$1 million each (including indirect costs) for up to 4 years in duration.

Other Key Information - Tools and Resources

- Applicants must demonstrate that they can apply the most recent technologies to the production of these tools and resources and that they will adequately and efficiently store and distribute the tools and resources once they are available. A description of quality control measures must be included in the application.
- Investigators are encouraged to develop national and international collaborations with research groups already working on the species of interest to minimize duplication of effort and maximize cost effectiveness.
- All model systems (especially the use of laboratory animals, cell cultures, etc.) must be thoroughly justified in terms of the program guidelines and relevance to U.S. animal agriculture. This program will no longer accept applications whose studies primarily utilize non-agricultural or non-aquacultured species as animal models.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

43.0C ANIMAL GENOME: BIOINFORMATICS

Background

The Bioinformatics program requests applications for the development of bioinformatic tools that will assist in functional genomics, annotation and comparative genomics of agriculturally important animals. These tools need to be designed to integrate with existing data/databases (not create new ones), serve as tools for genome analysis, provide for practical applications of genomic data and have a biological framework.

FY 2006 Priorities for Research

- 1) Tools that integrate genome sequence, genome annotations and pedigree information with biological function and phenotypic information for a single species or across multiple species; and
- 2) Animal bioinformatics tools to efficiently and effectively handle and interpret the genomic/genetic data being generated to accelerate the knowledge discovery process. (Examples include technology platforms, computational resources and analytical tools for integrative and comparative research.)

The total amount of support available for the Bioinformatics program element will be approximately \$1.5 million. The program element plans to make 1 or 2 awards of up to \$1 million each (including indirect costs) for up to 4 years in duration.

Other Key Information – Bioinformatics

- Bioinformatics tools should provide for all or part of the following:
 - Data collection protocols (i.e. laboratory information management);
 - Curation protocols - quality assessment and quality control;
 - Procedures for archiving of data to prevent accidental loss;
 - Protocols and policies related to release of data and submission of raw and processed data to public database; and
 - Data warehousing for online-access (including web-interfaces and bulk download capability).
- All model systems (especially the use of laboratory animals, cell cultures, etc.) must be thoroughly justified in terms of the program guidelines and relevance to U.S. animal agriculture. This program will no longer accept applications whose studies primarily utilize non-agricultural or non-aquacultured species as animal models.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

43.0D ANIMAL GENOME: FUNCTIONAL GENOMICS

Background

The Functional Genomics program element aims to assess gene function through development and application of global (genome-wide or system-wide) experimental approaches. Such approaches may make use of the information and reagents provided by genome sequencing and mapping and may employ major innovative technologies for genome-wide analysis supported by information technology.

FY 2006 Priorities for Research

- 1) Increase the understanding of the biological role of genomic sequence (including coding and regulatory sequences) in agriculturally important animals, and link these sequences to biological functions, product quality, or production efficiency.

The total amount of support available for the Functional Genomics program element will be approximately \$6 million. Starting in FY 2006, the Functional Genomics program element will be offered in alternate years and expects to make 6 to 8 awards of up to \$750,000 each (including indirect costs) for up to 4 years in duration.

Other Key Information – Functional Genomics

- The animal functional genomics program will only accept applications that propose to study animals of agricultural importance with a genome sequence of at least 5X coverage of ninety percent of a genome that is available in the public domain.
- Applications should make creative and innovative use of available sequence information and should focus on the function of genes and their associate sequence information relative to biological function.
- Applications should use tissue or cell-specific gene expression profiling to identify novel gene products that are temporally expressed in these animals. A significant bioinformatics component is expected in the application and must be budgeted for appropriately. The bioinformatics component of the application must include:
 - Data collection protocols;
 - Curation protocols - quality assessment and quality control;
 - Procedures for archiving of data to prevent accidental loss;
 - Protocols and policies related to release of data and submission of raw and processed data to public database; and
 - Data warehousing for online-access (including web-interfaces and bulk download capability).
- Collaboration with international partners is appropriate; however, applications must be submitted by eligible U.S. institutions.
- All model systems (especially the use of laboratory animals, cell cultures, etc.) must be thoroughly justified in terms of the program guidelines and relevance to U.S. animal agriculture. This program will no longer accept applications whose studies primarily utilize non-agricultural or non-aquacultured species as animal models.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

45.0 Functional Genomics of Agriculturally Important Microorganisms

Investigators are encouraged to contact Dr. Ann Lichens-Park, National Program Leader, at (202) 401-6460 or apark@csrees.usda.gov with questions.

Functional Genomics of Agriculturally Important Microorganisms will not be offered in FY 2006, but will be offered in alternate years starting in FY 2007 and expects to make

approximately six awards of up to \$1 million each (including indirect costs) for up to 4 years in duration.

Research in this area should address the characterization of the molecular mechanisms responsible for microbial processes, enabled by the availability of a sequenced microbial genome or genomes. Research activities should characterize, on a large scale, the function of genes or networks of genes in microbe(s) having a completely, or almost completely sequenced genome. The genome(s) of study must be of importance to U.S. agriculture.

51.3 Suborganismal Biology and Genomics of Arthropods and Nematodes

*Investigators are encouraged to contact Dr. Mary Purcell-Miramontes, National Program Leader, at (202) 401-5114 regarding questions about suitability of research topics (or at mpurcell@csrees.usda.gov to arrange a telephone consultation). The total amount of support available for this program will be approximately \$6.6 million. Program Deadline: Applications for both sections must be **received by** 5:00 P.M., Eastern Time, March 1, 2006.*

Background

The Suborganismal Biology and Genomics of Arthropods and Nematodes Program supports fundamental research at the suborganismal and molecular levels to address the problem of controlling invasive and re-emerging pests and the Nation's over-dependence on environmentally persistent pesticides. Advances in the molecular genetics, physiology, biochemistry and genomics of arthropods and nematodes are poised to provide novel solutions to these problems which threaten the Nation's food supply and natural resources.

To meet these identified needs of agriculture, the long-term (10 year) goal is to develop the scientific and technological framework for environmentally sound pest management strategies. Examples of promising outcomes include genetically improved organisms for pest control, improved plants or livestock resistant to attack by pests or diseases vectored by these pests; and development of novel pheromone blends and/or environmentally benign pesticides.

The program has two elements: Suborganismal Biology of Arthropods and Nematodes, and Genomics of Arthropods and Nematodes.

51.3A SUBORGANISMAL BIOLOGY OF ARTHROPODS AND NEMATODES

FY 2006 Priorities for Research

- 1) Physiological, biochemical and molecular basis of interactions between arthropods or nematodes and plants, livestock or beneficial organisms;

- 2) Mechanisms of interactions between arthropods or nematodes and agriculturally relevant pathogens where the focus is on the arthropod or the nematode; and
- 3) Characterization of novel targets for pest control, including semiochemicals and fundamental pesticide resistance studies.

Grants will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available will be approximately \$3.6 million.

51.3B GENOMICS OF ARTHROPODS AND NEMATODES

FY 2006 Priorities for Research

- 1) Chemical perception and signaling genes to elucidate interactions between pests or beneficial species with agricultural commodities or elucidation of tritrophic relationships;
- 2) Genetic regulation of the immune response relevant to pest control or protection of agricultural commodities; and
- 3) Genomic functions associated with pesticide susceptibility or resistance in the insect midgut or for development of novel targets for pest control.

Grants will not exceed \$750,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available will be approximately \$3 million.

Other Key Information

- Sequencing projects in the Genomics of Arthropods and Nematodes program element will be supported only if the project's immediate goal is to ascertain genome function. Large-scale and high throughput approaches to develop resources and databases with the potential to address broad issues in pest control and protection of agricultural commodities are particularly encouraged in this element.
- The systems under study may include pests occurring in horticultural and field crops, forests, rangeland, urban landscapes, livestock and food or feed transported and stored for human consumption. The term pest is limited to insects, mites, ticks, plant-parasitic nematodes and weeds (within the context of biological control of weeds and where the focus is on the biological control organism). Beneficial species include insect pollinators and biological control organisms (e.g., insects, microbes and nematodes) of arthropods and nematodes.
- The Project Description must include a section providing a clear justification for the system studied, in terms of economic and/or societal benefit to agricultural

and rural communities. Studies of model systems may be submitted to the program only if knowledge gained is applied to systems of economic or societal importance within the experimental design of the submitted project.

- Applications whose purpose is to develop diagnostic tests for pest detection or surveillance will only be considered if a direct linkage can be made for their utility in advancing knowledge of arthropod or nematode biology and genomics.
- Applications for research focusing on ecology, population genetics (including molecular population genetics) and behavior of arthropods and nematodes should be directed to the Organismal and Population Biology of Arthropods and Nematodes (51.2) Program. Applicants focusing on high-throughput approaches to functional genomics of plants, animals or microbes are advised to consult the respective National Program Leaders directing Plant Genome, Animal Genome or Microbial Genomics programs.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

52.1 Plant Genome

*Investigators are encouraged to contact Dr. Ed Kaleikau, National Program Leader, at (202) 401-1931 regarding questions about suitability of research topics (or at ekaleikau@csrees.usda.gov to arrange a telephone consultation). The total amount of support available for this program will be approximately \$8.5 million. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, February 15, 2006.*

Overview

This program supports research ranging from technology development to fundamental science and practical application for crop or forestry improvement in the U.S. Its priorities focus on technological advances and discoveries in areas such as a) analytical methods for mapping genes for complex traits for direct use by plant breeders, b) novel methods for analysis of the genome and its effect on biological function, c) cost-effective sequencing strategies to understand complex genome structure and organization, d) procedures to analyze the total expression patterns of genes under specific conditions, and e) appropriate data handling and analysis capabilities. The ultimate goal of the program is to contribute knowledge about the biology of agriculturally important plant processes and traits, which can be used to develop crops with enhanced economic value and expanded utilities.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are: increased fundamental knowledge of the structure, function and organization of plant genomes to improve agricultural efficiency and sustainability;

effective integration of modern molecular breeding technologies and traditional breeding practice for U.S. crop and forestry improvement; and improved U.S. varieties for agricultural growers and producers.

In FY 2006, the program will continue to focus on agriculturally significant plant families or species. In FY 2005, the program focused on genomic tools, resources and bioinformatics of Rosaceae, sequencing of the maize genome and functional analysis of the rice genome (see abstracts of funded projects, www.csrees.usda.gov/fo/plantgenomebioinformaticsgeneticresourcesnri.html, www.csrees.usda.gov/fo/functionalgenomicsnri.html).

In FY 2006, the program will have four program elements: Tools, Genetic Resources and Bioinformatics in Fabaceae; Functional Genomics in Fabaceae; Genome Structure and Organization in Wheat; and Integrated Applied Plant Genomics Coordinated Agricultural Project (CAP). In FY 2007, the program anticipates focusing on the agriculturally important Solanaceae.

52.1A PLANT GENOME: GENOME TOOLS, RESOURCES AND BIOINFORMATICS

Background

Plant genome tools, resources and bioinformatics will focus on research to advance knowledge of the genome of the agriculturally significant plant family, Fabaceae, that include important legume crops such as soybean, common bean, peanut, alfalfa, clover, pea, lentil, and chickpea (see, <http://catg.ucdavis.edu>). Research on Fabaceae offers unique opportunities for basic gene and genomics studies to provide nutritious food and feed, important phytochemicals to improve human health, increased sustainability of cropping systems through their fixation of nitrogen and renewable feedstock for biobased industrial products. Recognizing the considerable legume genomics resources available internationally, applicants are encouraged to develop applications that build or expand U.S. collaboration with the international community on legume genomics (e.g., the European Grain Legumes Integrated Project (see, <http://www.eugrainlegumes.org>), the Australian Centre of Excellence for Integrative Legume Research (see, <http://www.cilr.uq.edu.au>), and the Consultative Group for International Agricultural Research (see, <http://www.generationcp.org/vw/index.php>).

FY 2006 Priorities for Research

Applications on plant genome tools, resources and bioinformatics are requested that address:

- 1) Use of innovative approaches for mapping and identification of important genes (e.g., Physical maps, ESTs, cDNAs, BAC libraries, markers (e.g., SNPs, SSRs, etc.) including marker assisted selection, FISH, gene expression tools, micro-arrays, transformation technologies, etc.), QTL analysis (e.g., symbioses,

polyploidy, flower and pod development, nutritional composition, disease and pest resistance, etc.) and comparative genomics (e.g., development and/or use of cross-species markers, etc.). These tools should be explicitly developed with applied goals in mind, including acceleration of plant breeding, mapping and deployment of quantitative-trait loci in breeding programs, and molecular identification of beneficial alleles of any particular gene of agricultural significance.

2) Establishment or enhancement of professionally managed community repositories and distribution centers for plant genome resources designed to collect, organize, maintain and distribute high-quality genomic resources to the community at large to facilitate research. The application must be well justified and describe a management plan for what, how, and when the research community would have public access to the resources and it must include provisions for continued long-term storage, maintenance, and distribution of such a service beyond the requested award period, without assuming long-term (> 5 years) NRI support.

3) Plant bioinformatics and database needs to efficiently and effectively handle and interpret the genomic/genetic data being generated to accelerate the knowledge discovery process (e.g., BioMOBY technology platform, computational resources and analytical tools to address integrative and comparative research that can lead to hypothesis testing, validation and application, etc.).

The total amount of support available for the Plant Genome Tools, Resources and Bioinformatics program element will be approximately \$2.5 million. The program element plans to make 5 awards of up to \$500,000 (including indirect costs) for project periods of 2-3 years.

Other Key Information – Genome Tools Resources and Bioinformatics

- Although funding Fabaceae projects is the priority, the specific research area will accept applications (renewal, resubmission or new) from applicants not conducting research on Fabaceae to be reviewed and considered for funding within the limits of the program budget. Contact the National Program Leader regarding suitability of submitting an application to this priority area.
- Collaboration with international partners is appropriate; however, applications must be submitted by eligible U.S. institutions.
- Applicants proposing studies on Fabaceae must aim to release the results of their research to the public in a timely manner and anticipate coordination with the Legume Information System (LIS) (see, <http://www.comparative-legumes.org/>) to integrate genetic and molecular data from multiple species to enable cross-species

comparisons. A letter of support indicating coordination with LIS should be submitted with the application.

- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

52.1B PLANT GENOME: FUNCTIONAL GENOMICS

Background

Plant functional genomics will focus on the sequence of the reference species *Medicago truncatula*, *Lotus japonicus*, and *Glycine max* to enhance cross-legume genomics. Examples of research include comparative functional genomic analysis including transcriptomics, proteomics and metabolomics to associate sequence information to biological function to improve legumes for food and feed.

FY 2006 Priority for Research

- 1) Increase the understanding of the biological role of genomic sequence, including coding, regulatory and repeated sequences in the agriculturally important Fabaceae, and to link these sequences to physiological functions or agricultural and food processes.

The total amount of support available for the Functional Genomics program element will be approximately \$2.5 million. The program element plans to make 5 awards of up to \$500,000 (including indirect costs) for project periods of 2-3 years.

Other Key Information - Functional Genomics

- Collaboration with international partners is appropriate; however, applications must be submitted by eligible U.S. institutions.
- Applicants must aim to release the results of their research to the public in a timely manner and anticipate coordination with the Legume Information System.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

52.1C PLANT GENOME: GENOME STRUCTURE AND ORGANIZATION

Background

Plant genome structure and organization will focus on research to advance knowledge of the genome of wheat (*Triticum aestivum*) to explore pilot draft sequencing of gene rich

regions as an international effort (<http://www.ksu.edu/igrow>) and to coordinate with other U.S. Federal State Agencies and currently funded projects.

FY 2006 Priority for Research

1) Current knowledge of genome structure, organization and complexity, quality of anchored physical and genetic maps for sequence readiness, accompanying libraries (e.g., BAC, flow-sorted chromosome- and arm-specific, etc.) to test gene-enrichment procedures; use of transcript libraries to assess and facilitate genome annotation methods, and a public relational database that integrates genome data with other data types, etc.

The total amount of support available for the Genome Structure and Organization program element will be approximately \$1.5 million. The program element plans to make 1 award of up to \$1.5 million (including indirect costs) for project periods of 2-3 years.

Other Key Information - Genome Structure and Organization

- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

52.1D PLANT GENOME: APPLIED GENOMICS COORDINATED AGRICULTURAL PROJECT

Background

Investigators are encouraged to contact Dr. Ed Kaleikau, National Program Leader, at (202) 401-9131 or ekaleikau@csrees.usda.gov with questions.

The Integrated Applied Genomics Coordinated Agricultural Project (CAP) program will not be offered in FY 2006. Contingent on available funding, the program element will be offered again beginning in FY 2007.

In FY 2006, CSREES plans to award the next increment of funding to CAP grantees funded in 2004 and 2005 with approved project periods of 2-4 years if satisfactory progress has been achieved on the project. A continuation grant is a grant instrument by which the Department agrees to support a specified level of effort for a predetermined project period with a statement of intention to provide additional support at a future date, provided that performance has been satisfactory, appropriations are available for this purpose, and continued support would be in the best interest of the Federal government and the public.

The goal of the Applied Genomics CAP is to engage the applied plant-sciences, both public and private, and involve them in the application of basic discoveries to U.S. crop

or forestry improvement. In FY 2004 and FY 2005 the program supported CAPs focused on large-scale translational genomics for U.S. agriculture.

AGRICULTURAL BIOSECURITY PROGRAM CLUSTER

The Agricultural Biosecurity program cluster primarily addresses CSREES' strategic goal *to enhance protection and safety of the Nation's agriculture and food supply*. It also supports CSREES' strategic goals of *enhancing economic opportunities for agricultural producers and protecting and enhancing the Nation's natural resource base and environment*.

The Agricultural Biosecurity program cluster provides a foundation to tackle new and re-emerging pathogens or pests of major economic significance in the U.S. and that threaten both industry viability and consumer access to safe and affordable food. These programs also contribute to an effective security program for animals and plants that will allow the Nation to respond effectively to the intentional or accidental entry of a foreign pathogen, pest or other biological threat to the U.S. The study of zoonotic pathogens in some of these programs may also benefit public health. Additionally, knowledge from this area also helps producers improve production efficiency, lower production costs, and aids the discovery of alternatives to pesticides and antibiotics to control disease outbreaks. Activities emphasize basic and applied research approaches, as well as integrated research, education, and extension solutions for identified priorities.

Outcomes will contribute to new and improved pathogen and pest control strategies and tools such as: diagnostics, biosignatures, treatments, vaccines, preventatives, immune enhancers, alternatives to antibiotics and harmful pesticides, increased resistance to animal and plant diseases, enhanced animal protection, disease forecasting including pathogen or pest emergence, risk assessment, surveillance and communication programs.

In FY 2006, the NRI invites applications in the following cluster of programs related to Agricultural Biosecurity:

Animal Biosecurity Programs

- 20.1 Animal Biosecurity Coordinated Agricultural Projects
- 44.0 Animal Protection
- 51.2 Organismal and Population Biology of Arthropods and Nematodes

Plant Biosecurity Programs:

- 20.2 Plant Biosecurity
- 51.2 Organismal and Population Biology of Arthropods and Nematodes
- 51.8 Biology of Plant Microbe-Associations

AGRICULTURAL BIOSECURITY PROGRAMS

20.1 Animal Biosecurity Coordinated Agricultural Projects (CAP)

*Investigators are encouraged to contact Dr. Peter Johnson, National Program Leader, at (202)-401-1896 regarding questions about suitability of integrated activities (or at pjohnson@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$4.8 million (including indirect costs) for integrated projects for project periods of 4 years. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, October 31, 2006.*

Background

Strengthening the Nation's capacity to protect animal agriculture from disease losses and threats arising from high impact endemic diseases, new or re-emerging challenges, or foreign diseases accidentally or intentionally introduced, is a major challenge facing the U.S.. The Animal Biosecurity Program was initiated in FY 2003 and serves as a catalyst to bring the larger animal health community together for specific diseases or issues. The result will better integrate, coordinate, and complement current and future programs or projects related to that area, beyond just those objectives supported by an Animal Biosecurity award. The program develops and delivers science-based information and technologies to reduce the number and severity of agricultural disease outbreaks. Studies of zoonotic diseases (such as Avian Influenza) also benefit public health.

To meet these identified needs of agriculture, the long-term (10 year) goal for this program is to implement biosecurity protocols on a national scale for program-identified issues that detect, contain, minimize, and eliminate spread of diseases from animal to animal, site to site, and animal to human (where applicable). This will include improving the management of program-identified animal diseases that represent a threat to animal production, biosecurity, and public health. It will also include major progress towards diminishing the economic impact of animal diseases, and/or eradicating selected diseases, or preventing disease introduction into the U.S.

FY 2006 Priorities for Integrated Activities (those that combine research, education, and/or extension)

This program only invites renewal applications for existing Coordinated Agricultural Projects (CAP); specifically for:

- 1) Porcine Reproductive and Respiratory Syndrome (PRRS); and
- 2) Johne's Disease.

Other Key Information

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- This program seeks to initiate or maintain CAPs that develop integrated (Research, Education, Extension), community approaches for a limited number of program-identified diseases or issues. Specifically, this may include:
 - 1) Community products such as:
 - Development and/or updating of community roadmaps including gap analysis;
 - Standardized protocols for various areas (e.g., diagnostics, vaccine trials, animal studies, genetic resistance studies, etc.);
 - Sample repositories and databases;
 - Genomics/proteomics tools, reagents, and protocols (e.g., mutants; arrays; clone sets; immunological typing of animals; bioinformatics tools and services, etc.); and
 - Extension and communication programs (e.g., training tools, demonstrations, conferences, continuing education, publications, websites, etc.).
 - 2) Leveraging and coordinating project resources with other USDA and non-USDA efforts for the same area;
 - 3) Filling critical knowledge gaps (e.g., pathogen biology; mechanisms of host/pathogen interactions; epidemiology; effective communication protocols, etc.), including the exploration of some high-risk approaches; the award size is not sufficient to support all needed research, some of which is leveraged and supported by other programs; and
 - 4) Piloting the implementation of new disease control strategies and tools (e.g., vaccines; new or improved diagnostics and detection systems; preventatives; producer outreach programs for the adoption of improved Biosecurity measures and awareness, etc.).
- Renewal applications should:

- 1) Summarize originally funded project objectives and describe progress to date, including milestones achieved for each objective;
 - 2) Document stakeholder/partner assessment of project impact;
 - 3) Outline activities proposed for a renewal period, including a discussion of how the proposed activities support the Animal Biosecurity Program's long-term objectives;
 - 4) Propose a maximum budget of \$1.2 million per year for up to 4 years (\$4.8 million total);
 - 5) Summarize and assess project management and structure to date, including interactions among project participants (e.g., project director, co-project directors, collaborators, advisory board(s), other relevant partners and stakeholders); and
 - 6) Describe proposed changes in project management (if any).
- If a competitive renewal is received by the PRRS and/or John's CAPs in FY 2006, the program anticipates that a second competitive renewal in three or four years would not be solicited. Instead, the program would initiate a focused effort for another high impact disease or issue. Therefore, renewal applications should also articulate an exit strategy or an alternative self-sustaining strategy from continued Animal Biosecurity Program support as a multi-million dollar CAP beyond a 6-7 year total lifetime.

44.0 Animal Protection

*The total amount of support available for this program will be approximately \$11 million with approximately \$1 million for integrated projects and \$10 million for research projects. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 15, 2005.*

Overview

Maintaining and improving animal health to meet the food and fiber security needs of this Nation is an increasingly difficult challenge. Despite advances in science, new and re-emerging diseases occur with an increasing frequency due to a variety of factors. The program develops and delivers science-based information and technologies to reduce the number and severity of agricultural disease outbreaks. In addition to program-identified disease priorities, this focus also includes animal well being. Additionally, studies of zoonotic diseases (such as Avian Influenza) may benefit public health.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are: improve the management of program-identified, high priority animal diseases or issues that represent a threat to animal production, food security, and public health through the reduction of losses due to mortality, reduced yield, and cost of drugs and other treatments or preventatives; and develop and implement effective animal care and use methods and systems contributing to the welfare, well-being, and humane treatment of food animals.

The Animal Protection program has two program elements: Animal Disease and Animal Well-being.

44.0A ANIMAL PROTECTION: ANIMAL DISEASE

For the Animal Disease program element, investigators are encouraged to contact Dr. Peter Johnson (202) 401-1896 or Dr. Peter Brayton (202) 401-4399, National Program Leaders, regarding questions about suitability of research topics (or at pjohnson@csrees.usda.gov or pbrayton@csrees.usda.gov to arrange a telephone consultation).

Background

The Animal Disease program element focuses on high priority diseases of economic importance to U.S. animal agriculture, including equine and aquaculture species. This emphasis will increase the knowledge and technology needed to prevent or reduce the severity of animal diseases. It will also contribute to an increase in the efficiency of animal production systems, a reduction in non-tariff trade barriers, and high-quality safe foods for consumers. The program addresses a major limiting factor in animal agriculture: insufficient basic and applied information about diseases in animals of agricultural importance. This knowledge gap seriously impedes a major reduction in costly economic losses from animal diseases that are already present in the U.S. Information gaps also jeopardize food security and the future viability of animal industries by increasing their vulnerability to pathogens which may establish new niches or undergo genetic mutations to result in new and re-emerging diseases, or which may be accidentally or intentionally introduced.

FY 2006 Priorities for Research

1) Species Specific High Priority Areas

- (a) Aquaculture: *Edwardsiella ictaluri*; *Flexibacter columnaris*; Infectious hematopoietic necrosis;
- (b) Equine: Laminitis; *Streptococcus equi* (strangles); *Rhodococcus equi*;
- (c) Poultry: Avian *Clostridium perfringens*; Marek's Disease; Poult Enteritis Complex;
- (d) Ruminants: Bovine viral diarrhea; Bovine respiratory disease complex; Infectious causes of dairy cattle mastitis; Johne's disease; and
- (e) Swine: Porcine Reproductive and Respiratory Syndrome (PRRS); Post-weaning *E.coli* diarrhea; Swine Influenza.

2) Non-Species Specific High Priority Areas

(a) Diseases that may be introduced to livestock through interactions with wildlife (including chronic wasting disease);

(b) Foreign Animal Diseases (e.g., Foot and Mouth Disease, Avian Influenza, Exotic Newcastle Disease, Vesicular Stomatitis Virus, Classical Swine Fever, feral swine reservoirs, Bovine Spongiform Encephalopathy); and

(c) Basic or applied immunology applications that do not include work with a specific disease are also considered a high priority if the Project Director justifies the work's potential for broad applicability to multiple diseases. A basic immunology approach may propose to work with a disease agent other than one of the high priority agents listed above only if the project director provides convincing justification (in the Rationale and Significance section of the Project Description) that the outcome will be broadly applicable beyond that single agent. Applications that address antimicrobial peptides are encouraged.

3) Focus Requested for High Priority Areas

(a) Pathogen Biology (e.g., virulence mechanisms, organismal molecular biology, processes critical to infection initiation);

(b) Mechanisms of Host/Pathogen Interactions; Immunology (e.g., pathogenesis, innate and adaptive immune responses/pathogen clearance, mucosal immunity, immune modulators); and

(c) Etiology, Control, Epidemiology and Ecology (e.g., risk assessment, modeling, economic assessments, molecular epidemiology, evaluation of management strategies and their impact on disease). *NOTE: Applications that develop new or improved diagnostic tests are expected to include an appropriate validation plan.*

The total amount of support available for the Animal Disease program element will be approximately \$9 million. Grants for this program element will not exceed \$375,000 (including indirect costs) for project periods of 2-4 years.

Other Key Information – Animal Disease

- Multi-disciplinary approaches are encouraged.
- Applications that address Avian Influenza, Johne's Disease, and Porcine Reproductive and Respiratory Syndrome (PRRS) remain a high priority for funding within the Animal Protection Program which seeks to support and strengthen efforts initiated under Coordinated Agricultural Projects (CAPs). Applications on Avian Influenza, Johne's Disease or Porcine Reproductive Respiratory Syndrome (PRRS) are expected to document in the Rationale and Significance section of the Project Description that: (1) the proposed work fits

within the framework of the community objectives established for the CAPs for each of those areas; (2) the specific proposed objectives are not already being undertaken within those efforts; and (3) the Project Director will participate in reporting and coordination activities associated with those projects. Project Directors submitting applications on those three diseases who are not already affiliated with those projects should consult the websites established for these community efforts (Avian Influenza: <http://www.agnr.umd.edu/aicap>; PRRS: <http://www.porkboard.org/prrs>; Johne's Disease: <http://www.jdip.org>).

- The program encourages applicants to take advantage of genomic approaches (e.g., functional genomics, proteomics) in order to accelerate the discovery of new targets for diagnostics, vaccines, and treatments. The program supports international efforts to better capture the current and future value of microarray data. If proposing microarray studies, applicants should include a statement addressing Minimum Information About Microarray Experiment (MIAME) compliance (see, <http://www.mged.org>).
- Animal genetics applications (e.g., applications with a primary focus on identifying, isolating, and characterizing the genetic basis for disease resistance in the host animal) should be directed to the Animal Genome (43.0) Program.
NOTE: Immunogenetics applications should be directed to the Animal Genome (43.0) Program.
- Vaccine development applications that may approach or enter the commercialization stage are also encouraged to explore the USDA/SBIR (Small Business Innovation Research Program) for possible funding. The RFA for that program is available at <http://www.csrees.usda.gov/funding/sbir/sbir.html>.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

44.0B ANIMAL PROTECTION: ANIMAL WELL-BEING

For the Animal Well-being program element, investigators are encouraged to contact Dr. Peter Brayton, National Program Leader, at (202)-401-4399 regarding questions about suitability of research topics and integrated activities (or pbrayton@csrees.usda.gov to arrange a telephone consultation).

Background

The Animal Well-being program element focuses on enhancing animal well-being throughout the food production cycle. This program will provide information on how animals of agricultural importance in the U.S. interact with the production environment and respond to animal management practices. Where appropriate, management practices will be developed that improve animal well-being. Such knowledge is needed to remain

competitive globally and to maintain consumer trust through science-based studies. Research to ensure animal well-being may also help decrease animal management and health-care costs. This area addresses agricultural food security by helping to assure continued access of U.S. animal products to national and international markets.

FY 2006 Priorities for Research and Integrated Activities (those that combine research, education, and/or extension)

- 1) Develop science-based criteria to improve measurements of well-being, including pain, stress, fear, and behavioral needs; and, the assessment of how these conditions impact animal well-being;
- 2) Determine the impact of alternative management practices on animal well-being and food quality, including housing, handling, transportation and harvest (such as, poultry slaughter procedures, etc.); and,
- 3) Assess the behavior and well-being of genetically modified food animals.

The total amount of support available for the Animal Well-Being program element will be approximately \$1.5 million. Grants for this program element will not exceed \$375,000 (including indirect costs) for project periods of 2-4 years.

Other Key Information – Animal Well-being

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- Both basic and applied research applications are solicited that contribute to the development of long-term management options and/or short-term production practices that assure animal well-being. Multi-disciplinary approaches are encouraged.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

20.2 Plant Biosecurity

*Investigators are encouraged to contact Dr. Liang-Shiou Lin at (202) 401-5042 or Dr. John L. Sherwood at (202) 690-1659, National Program Leaders, regarding questions about suitability of integrated activities (or at llin@csrees.usda.gov or jsherwood@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$2 million (including indirect costs) for integrated projects for project periods of 2-4 years. Budget requests are expected to be multi-investigator and/or multi-institutional. The total amount of support available for this program will be approximately \$4 million. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, June, 15, 2006.*

Background

This program supports integrated projects aimed at ensuring a continued supply of safe, high-quality, affordable food and fiber for consumers in the U.S. and international trade partners. The goal of the program is to harness our Nation's scientific and technological resources to help agricultural producers and professionals implement strategies to safeguard agriculture in the U.S. from high-consequence plant diseases. To accomplish this, the program will focus on integrated research, education and extension projects that counter threats to the agriculture system in the U.S., both by stepwise improvements to current responses and by development of innovative new capabilities.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are: provide the understanding and technologies needed to anticipate, deter, protect against, detect, mitigate, and recover from threats to the Nation's agricultural plant security; provide decision makers and responders with knowledge and decision support tools needed to anticipate, prevent, prepare for and respond to agricultural threats of high-consequence plant pathogens; and enable strategies for control and elimination of high-risk plant pathogens.

FY 2006 Priority for Integrated Activities (those that combine research, education, and/or extension)

- 1) Early detection, diagnosis and monitoring tools for species of *Phytophthora*, *Ralstonia*, or *Xylella*, for which whole genome sequences are available.

Other Key Information

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective

extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.

- The program has supported projects since 2003 on research and outreach to address early detection, diagnosis and monitoring; rapid response tools to predict the spread of high-risk organisms; and strategies for control and elimination of introduced high-risk organisms (see, www.csrees.usda.gov/fo/biosecurityanimalplantnri.html). Simultaneously, CSREES and others have also invested in sequencing many agriculturally important microorganisms (see abstracts of funded projects, www.csrees.usda.gov/fo/microbialgenomesequencingnri.html). The sequenced genomes of plant pathogens have significant potential value for addressing long term goals and near term objectives for plant biosecurity.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

51.2 Organismal and Population Biology of Arthropods and Nematodes

*Investigators are encouraged to contact Dr. Mary Purcell-Miramontes, National Program Leader, at (202) 401-5114 regarding questions about suitability of research topics (or at mpurcell@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$5.8 million. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 16, 2005.*

Background

Several emerging issues are challenging our ability to provide high quality food and fiber to the Nation's global economy. The world's population has recently reached 6.4 billion and is predicted to double by the 2050s. This unprecedented level of growth will necessitate increased production and protection of agricultural commodities. Also, our ability to respond to and recover from pests and diseases that threaten our food supply has recently assumed paramount importance. To address these problems, fundamental knowledge is needed to form the basis of novel management strategies for pests, which will lead to better utilization of beneficial species.

To meet these identified needs of agriculture, the long-term (10-year) goals of this program are to: achieve decreased inputs for crop protection against pests by increasingly relying on environmentally sound management strategies (e.g., biological control using natural enemies, new host plant resistant varieties, mating disruption technique for area-

wide control of major pests); improve understanding of ecological factors associated with the establishment, rate of increase and spread of exotic and invasive species; and provide scientific foundations for organic production of crops, anticipating the increased demand for these products.

FY 2006 Priorities for Research

- 1) Understand how naturally occurring compounds (e.g., plant-derived compounds, semiochemicals, or microbial toxins) affect the behavior, distribution and abundance of arthropods or nematodes with hosts and evaluate the implications for pest and natural enemy behavior and population dynamics;
- 2) Elucidate characteristics of evolutionary change and population-level spread of arthropods or nematodes; and
- 3) Determine how behavioral aspects of organisms are associated with patterns of host use or population dynamics of arthropods or nematodes.

Other Key Information

- The systems under study include pests occurring in horticultural and field crops, forests, rangelands, urban landscapes, livestock and food or feed transported and stored for human consumption. The term pest is limited to insects, mites, ticks, plant parasitic nematodes and weeds (within the context of biological control of weeds and where the focus is on the biological control organism). Beneficial species include insect pollinators and biological control organisms (e.g., insects, microbes, and nematodes) of the above pests.
- Proposed projects should demonstrate relevance to agriculture in the U.S. The Project Description portion of the application must include a clear justification for the system studied, in terms of economic and/or societal benefit to agriculture and rural communities. Studies of model systems may be submitted to the program only if knowledge gained is applied to systems of economic or societal importance within the experimental design of the submitted project.
- Applications that include a modeling component must give consideration to validation of the model.
- Applications whose purpose is to develop diagnostic tests for pest detection or surveillance will only be considered if a direct linkage is made to advancing knowledge of organismal and/or population biology of arthropods and nematodes.
- Applications for research focusing on molecular genetics, biochemistry or physiology or genomics of insects, mites, ticks and nematodes should be directed to the Suborganismal Biology and Genomics of Arthropods and Nematodes (51.3) Program. Applicants whose projects focus on studies assessing or managing the

environmental risk of introducing transgenic organisms are advised to consult with program leaders of the USDA-CSREES Biotechnology Risk Assessment Research Grants Program (see, www.csrees.usda.gov/fo/biotechnologyriskassessment.html). Applicants whose projects have substantial extension and education components are advised to consult with program leaders of other biobased pest management grant programs in CSREES (see, http://www.csrees.usda.gov/nea/pest/in_focus/bbpest_if_programs.html).

- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

51.8 Biology of Plant-Microbe Associations

*Investigators are encouraged to contact Dr. Ann Lichens-Park, National Program Leader, at (202)401-6460 regarding questions about suitability of research topics (or at apark@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$5.4 million. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 16, 2005.*

Background

The Biology of Plant-Microbe Associations Program enhances protection and safety of the Nation's agriculture and food supply. More specifically, it reduces the incidence of foodborne illnesses and contaminants through science-based knowledge and education, and develops and delivers science-based information and technologies to reduce the number and severity of agricultural pest and disease outbreaks. Aspects of the program enhance economic opportunities for agricultural producers and protect the Nation's natural resource base and environment.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are: improved resistance to high-impact plant diseases based on knowledge of plant pathogens, their plant hosts and host-pathogen interactions; improved methods of manipulating plant-associated microorganisms in order to achieve safer, more effective, more environmentally sound and more profitable disease management by interfering with microbial cell to cell signaling; and improved disease forecasting based on better understanding of how new pathogens emerge, survive and spread, including the effect(s) of environmental factors on pathogen spread.

FY 2006 Priorities for Research

- 1) Elucidation of molecular mechanisms of disease and resistance interactions between microbial plant pathogens and their host plants;
- 2) Molecular mechanisms of communication between plant-associated microorganisms (e.g. plant pathogens, microbial biological control agents, nitrogen-fixing bacterial endosymbionts) or between microorganisms and plants; and
- 3) Mechanisms by which plant pathogens emerge and spread over short (e.g. within a plant host) and long (geographic) distances, including the influence of environmental factors on pathogen spread.

Other Key Information

- Applications must address plant-microbe associations using economically important plants and/or microorganisms or plants and/or microorganisms that are important to agricultural sustainability (e.g. microorganisms that contribute to more environmentally sustainable crop production). In the “Rationale and Significance” section of the project description, applicants are required to include a subsection entitled “Justification of Relevance to U.S. Agriculture” providing a clear justification for the system studied in terms of economic and/or societal benefit to U.S. agriculture.
- Studies of model systems may be submitted to the program only if knowledge gained is applied to systems of economic or societal importance to U.S. agriculture within the experimental design of the submitted project and to be implemented during the project period. If the application focuses on the plant side of the association, knowledge gained from a model plant must be applied to a plant of economic importance to U.S. agriculture or to agricultural sustainability.
- Applications that focus on how microbial processes affect the soil environment should be directed to the Soil Processes (25.0) Program.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

AGRICULTURAL PRODUCTION AND VALUE-ADDED PROCESSING PROGRAM CLUSTER

The Agricultural Production and Value-Added Processing program cluster addresses CSREES’ strategic goal *to enhance economic opportunities for agricultural producers*. It also supports CSREES’ strategic goals of *enhancing protection and safety of the*

Nation's agriculture and food supply, increasing economic opportunities and improving quality of life in rural America, improving the Nation's nutrition and health, and protecting and enhancing the Nation's natural resource base and environment.

Agricultural production plays a crucial role in the success and growth of the Nation's economy. The programs in this cluster support the fundamental and mission-linked research and integrated activities needed to address current and future challenges to food, feed, and fiber production and post-harvest processing. They also support the science-based knowledge and new technologies that will lead to new and improved uses for agricultural and forestry biomass (resources) in industrial, energy, and pharmaceutical applications. As genomic data, tools, and resources become available for more agricultural species, the basic research supported by Agricultural Production programs is essential in forming the foundation of scientific knowledge needed to use cutting edge genomics data and technology in food, feed, and fiber production.

Programs range from fundamental research on plant and animal biology to applied research on product development, improvement and competitiveness, thus linking basic research to application. Further, education and outreach activities in these programs will enable transfer of knowledge from researcher to producers, consumers and other stakeholders. Projects funded by these programs will provide vital science-based knowledge and outreach to ensure future growth and development of agricultural production and value-added processes, thus increasing economic opportunities for producers.

In FY 2006, the NRI invites applications in the following programs related to Agricultural Production and Value-Added Processing:

Animal Production Programs:

- 41.0 Animal Reproduction
- 42.0 Animal Growth and Nutrient Utilization

Plant Production Programs:

- 22.1 Agricultural Plants and Environmental Adaptation
- 51.8 Biology of Plant-Microbe Associations - *refer to program description in Agricultural Biosecurity program cluster*
- 52.2 Genetic Processes and Mechanisms of Agricultural Plants
- 53.0 Developmental Processes of Agricultural Plants
- 54.3 Agricultural Plant Biochemistry

Value-Added Production and Processing Programs:

- 61.0 Agricultural Markets and Trade
- 71.1 Improving Food Quality and Value

AGRICULTURAL PRODUCTION AND VALUE-ADDED PROCESSING PROGRAMS
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41.0 Animal Reproduction

*Investigators are encouraged to contact Dr. Mark Mirando, National Program Leader, at (202) 401-4336 regarding questions about suitability of research topics and integrated activities (or at mmirando@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$350,000 (including indirect costs) for research projects and \$450,000 (including indirect costs) for integrated projects for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4.0 million, with up to \$900,000 for integrated projects. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, November 30, 2005.*

Background

Reducing infertility and improving fertility in breeding populations of agriculturally important animals, including aquacultured species, is of major importance for efficient animal production. In several species, fertility has declined significantly over the past several decades. New knowledge is needed to improve fertility and facilitate implementation of integrated animal production systems that will contribute to sustainability of the animal production unit. Approaches to managing animal reproduction also are key to future application of biotechnologies. Therefore, the objective of this program is to increase the knowledge base for reproductive biology of agriculturally important animals with the goal of reducing infertility and improving overall reproductive management in animal production systems.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are to: improve fertility and decrease infertility; develop improved methods for sterilization and production of monosex populations of animals; and improve reconstitution of germplasm from preserved sources (including cryopreserved gametes and embryos).

FY 2006 Priorities for Research

- 1) Gonadal function, including production and preservation of gametes;
- 2) The hypothalamic-pituitary axis; and
- 3) Embryonic and fetal development, including interaction between the conceptus and its uterine environment.

FY 2006 Priority for Integrated Activities (those that combine research, education, and/or extension)

1) Regulation of fertility through manipulation or management of gonadal function, the hypothalamic-pituitary axis, and or embryonic and fetal development.

Other Key Information - Research and Integrated Activities

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- All model systems (especially the use of laboratory animals, cell cultures, etc.) must be thoroughly justified in terms of the program guidelines and relevance to U.S. animal agriculture. This program will no longer accept applications whose studies primarily utilize non-agricultural or non-aquacultured species as animal models.
- Applications that focus on uterine defense mechanisms (e.g., non-disease specific immunology) should be directed to the Animal Protection (44.0) Program. Applications addressing the effects of disease, animal health, or alterations in the immune system on reproduction should not be submitted to this program. Applications that involve gene transcription profiling must include physiological or functional studies at the cellular, systemic or whole animal level.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

42.0 Animal Growth and Nutrient Utilization

Investigators are encouraged to contact Dr. Mark Mirando, National Program Leader, at (202) 401-4336 regarding questions about suitability of research topics and integrated activities (or at mmirando@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$350,000 (including indirect costs) for research projects and \$450,000 (including indirect costs) for integrated projects for project

*periods of 2-4 years. The total amount of support available for this program will be approximately \$4.5 million with up to \$900,000 for integrated projects. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, May 17, 2006.*

Background

Suboptimal nutrition and growth are limiting factors in animal productivity. Basic information regarding these processes in agriculturally important animals, including aquaculture species, is lacking. The primary objective of the program is to increase our understanding of the biological mechanisms underlying normal animal growth, development of skeletal muscle, lactation, and nutrient digestion and metabolism. New knowledge in these areas is needed to improve animal production and control muscling, growth, metabolism and mammary function. Research is also needed to identify biological mechanisms for increasing dietary nutrient availability, directing nutrient partitioning toward more protein and less fat, enhancing nutrient composition in animal products, and minimizing excretion of nutrients as waste products.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are to: improve quality and efficiency of meat and milk production; improve animal utilization of nutrients; and reduce output of nutrients into the environment as animal waste products.

FY 2006 Priorities for Research and Integrated Activities (those that combine research, education, and/or extension)

- 1) Improving quality and efficiency of meat and milk production; and
- 2) Control of nutrient intake, digestion, absorption and availability to improve nutrient utilization and minimize excretion of endogenous nutrients as waste products.

Other Key Information - Research and Integrated Activities

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.

- All model systems (especially the use of laboratory animals, cell cultures, etc.) must be thoroughly justified in terms of the program guidelines and relevance to U.S. animal agriculture. This program will no longer accept applications whose studies primarily utilize non-agricultural or non-aquacultured species as animal models.
- Applications concerning the developmental biology of the immune system should be directed to the Animal Protection (44.0) Program. Applications focusing on developmental biology of the reproductive system (including embryonic, gonadal, and placental development) and applications dealing with nutritional regulation of reproduction should be directed to the Animal Reproduction (41.0) Program. Applications addressing the effects of diseases or alterations in the immune system on animal growth, lactation or nutrient utilization, or those that address nutritional regulation of animal health should not be submitted to this program. Applications that involve gene transcription profiling must also include physiological or functional studies at the cellular, systemic or whole-animal level.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

22.1 Agricultural Plants and Environmental Adaptation

*Investigators are encouraged to contact Dr. Gail McLean, National Program Leader, at (202) 401-6060 regarding questions about suitability of research topics and integrated activities (or at gmclean@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$400,000 (including indirect costs) for research projects and \$600,000 (including indirect costs) for integrated projects for project periods of 2-4 years. Budget requests over \$400,000 are expected to be multi-investigator and/or multi-institutional. The total amount of support available for this program will be approximately \$3.5 million with up to \$700,000 for integrated projects. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, January 10, 2006.*

Background

The future of agricultural productivity and sustainability depends on the ability of crop plants to grow and be productive in response to a changing environment. To lessen impacts on yield, agriculturally-important plants and trees will need to adapt to environmental perturbations which can range from short term challenges, such as flooding, to long term challenges, such as global climate change, sustained drought, and loss of arable land. This program supports fundamental plant research to optimize biological yield and quality while improving tolerance to environmental stress in agriculturally important plants. This research will enable both the improvement of plant productivity during environmental stress and the development of agriculturally important plants tolerant of various environmental conditions and stresses. It also will build on

genomics and genetics to devise new or improved strategies for decreasing the impact of environmental stress on agricultural and forest productivity and sustainability. This program also supports integrated activities to advance training in plant breeding and germplasm enhancement. In addition to facilitating training of the future generation of plant breeders, these integrated activities will aid transfer of science-based knowledge to agricultural producers by helping provide the expertise needed for plant biotechnology and breeding approaches.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are: generate fundamental knowledge of genes, proteins, and networks involved in plant abiotic stress response that can lead to development of approaches and tools to aid agricultural plant productivity in light of reduced inputs or increased environmental stresses; and develop, through biotechnology and/or breeding, new plant lines or populations for improved stress-resistance in agricultural plants.

FY 2006 Priorities for Research

- 1) Water stress (including drought, salt, and flooding stress);
- 2) Global change stress (including increased carbon dioxide, ozone); and
- 3) Temperature stress.

Other Key Information - Research Projects

- Please note that the program priorities for FY 2006 have been narrowed, and some priority areas will only be offered on alternate years. Research on nutrient stress is not solicited this year but will be solicited in odd-numbered fiscal years; thus it will be solicited next year, FY 2007. Research on temperature stress will only be solicited on even-numbered years and thus will not be solicited next year.
- Research should identify and/or characterize genes, proteins, and regulatory signaling networks that contribute to abiotic stress tolerance for the program priorities above. Such research may include identification of the physiological, biochemical, molecular, cellular, and morphological changes that are part of the plant's mechanism of response to stress.
- All applications must demonstrate a clear link to a realistic environmental problem and use realistic treatments and measurement of plant stress status and environmental conditions.
- The integration of molecular biology methods with physiological and ecophysiological approaches is particularly encouraged.
- Applications on phytoremediation or adaptation to biotic stresses, such as herbivory, should not be submitted to this program. For applications containing

ecosystem level studies, applicants should consider submission to the Managed Ecosystems (23.1) Program.

- **Use of Model Species:** Importance of the proposed research to agricultural productivity and sustainability should be clearly indicated in the application. Researchers are strongly encouraged to conduct research directly in a crop or forest species important to agriculture. Use of non-crop model systems is acceptable if tools are not yet available in the crop species of interest. However, the investigator must clearly indicate how such non-crop model studies are relevant to agriculture and food systems or forest species, the strategy for transferring the knowledge to these species for agricultural or forestry benefit, and the potential timeframe for such transfer.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

FY 2006 Priority for Integrated Activities (those that combine research, education, and/or extension)

1) Plant breeding and germplasm enhancement, with particular emphasis on development of drought tolerant agricultural plants and on training scientists in plant breeding. Applicants are encouraged to utilize germplasm from the National Plant Germplasm System (NPGS).

Other Key Information - Integrated Activities

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- The education component of an integrated application must go beyond the level of laboratory training for graduate students or postdoctoral researchers supported by the grant. Examples of education activities in agricultural plant breeding and germplasm enhancement include curriculum and/or degree program development, multi-college/university approaches to regional or interstate curriculum development, faculty sharing, and joint degrees.

- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

52.2 Genetic Processes and Mechanisms of Agricultural Plants

*Investigators are encouraged to contact Dr. Liang-Shiou Lin, National Program Leader, at (202)401-5042 regarding questions about suitability of research topics and integrated activities (or at llin@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$400,000 (including indirect costs) for research projects and \$750,000 (including indirect costs) for integrated projects for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4.2 million with up to \$1 million for integrated projects. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 1, 2005.*

Background

Basic understanding of plant genes and genetic processes and mechanisms is crucial for the genetic improvement of agricultural plants. The goal of this program is to supply such fundamental knowledge to support the development of genetically superior varieties of crop and forest species that are more cost-effective to grow and will provide more profit for the farmers in the ever more competitive global market. The program also aims at increasing the genetic diversity of crops in the U.S. to meet future threats and challenges and in training new scientists in plant breeding.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are: obtain a detailed understanding of the regulation of gene expression in agricultural plants to better use agriculturally important genes for improved crop production and quality; and enhance the genetic diversity of existing crop families with the possibility of developing novel crops to meet future challenges.

FY 2006 Priorities for Research

- 1) Functional studies of agriculturally important genes and gene products, including the development of improved mutational and gene silencing approaches for these studies; and
- 2) Regulatory mechanisms of gene expression. Research is encouraged that aims at understanding gene regulatory networks at the systems level.

FY 2006 Priority for Integrated Activities (those that combine research, education, and/or extension)

- 1) Application of plant population and evolutionary genetics to germplasm enhancements with emphasis on increasing the genetic diversity of crops in the

U.S. and educating scientists in principles and techniques of crop germplasm enhancement. Applicants are encouraged to utilize germplasm from the National Plant Germplasm System (NPGS).

Other Key Information - Research and Integrated Activities

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- Changes to the program for FY 2006 from FY 2005 are as follows: The areas of mechanisms of transposition, replication and repair will not be offered; the priority on epigenetic mechanisms is combined with the priority on gene regulatory mechanisms, with new emphasis on systems level understanding of gene regulatory networks; and the priority on genetic processes at the population/evolution level is now an integrated priority emphasizing the integration of research, education and/or extension.
- The education component of an integrated application must go beyond the level of laboratory training for graduate students or postdoctoral researchers supported by the grant. Examples of education activities in agricultural plant breeding and germplasm enhancement include curriculum and/or degree program development, multi-college/university approaches to regional or interstate curriculum development, faculty sharing and joint degrees.
- Use of Model Species: Importance of the proposed research to agricultural productivity and sustainability should be clearly indicated in the application. Researchers are strongly encouraged to conduct research directly in a crop or forest species important to agriculture. Use of non-crop model systems is acceptable if tools are not yet available in the crop species of interest. However, the investigator must clearly indicate how such non-crop model studies are relevant to agriculture and food systems or forest species, the strategy for transferring the knowledge to these species for agricultural or forestry benefit, and the potential timeframe for such transfer.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

53.0 Developmental Processes of Agricultural Plants

*Investigators are encouraged to contact Dr. Liang-Shiou Lin, National Program Leader, at (202)401-5042 regarding questions about suitability of research topics (or at llin@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$400,000 (including indirect costs) for research projects for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4.2 million. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, February 7, 2006.*

Background

The goal of this program is to provide fundamental knowledge on plant growth and development over various phases of the plant life cycle to improve crop plants through modification of plant growth patterns or developmental processes. This will provide more profit and less risk for U.S. farmers in the ever more competitive global market.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are: develop crop models for studying plant developmental processes (one or two cereal crops, one or two dicot crops, one hardwood tree, and one conifer); detailed understanding of signal transduction mechanisms (hormones, light, gravity, etc.) in agricultural plants to improve their performance; and enhance our ability to alter developmental processes of agricultural plants to improve plant characteristics.

FY 2006 Priorities for Research

- 1) Developmental pathways leading to the formation of vegetative (particularly roots) or reproductive structures, including the development of gene profiling, genetic, and proteomic tools for these studies;
- 2) Hormonal regulation of growth and development. Studies of “cross talk” between different hormones or between hormones and other signals using metabolomic tools are especially encouraged; and
- 3) Characterization of cellular structures and processes crucial for plant development.

Other Key Information

- Changes to the program for FY 2006 from FY 2005 are as follows: The areas of regulation of cell cycle and mechanisms of cell and organelle division and differentiation are not offered; and the priority on signal transduction is combined with hormonal regulation of growth and development, with new emphasis on cross talk between signaling pathways.

- Use of Model Species: Importance of the proposed research to agricultural productivity and sustainability should be clearly indicated in the application. Researchers are strongly encouraged to conduct research directly in a crop or forest species important to agriculture. Use of non-crop model systems is acceptable if tools are not yet available in the crop species of interest. However, the investigator must clearly indicate how such non-crop model studies are relevant to agriculture and food systems or forest species, the strategy for transferring the knowledge to these species for agricultural or forestry benefit, and the potential timeframe for such transfer.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

54.3 Agricultural Plant Biochemistry

*Investigators are encouraged to contact Dr. Gail McLean, National Program Leader, at (202) 401-6060 regarding questions about suitability of research topics (or at gmclean@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$400,000 (including indirect costs) for research projects. The total amount of support available for this program will be approximately \$4.2 million. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, February 7, 2006.*

Background

For plant genomics to lead to development of agricultural plants with improved or optimized performance, the biochemical processes and pathways in the cell and the genes and proteins involved in biochemical processes and pathways, must be characterized. Indeed, lack of knowledge about a biochemical pathway or process often limits the application of the genomic and genetic information to improving agricultural plant productivity and quality. The goal of this program is to provide basic knowledge about biochemical processes, pathways, and interactions in agriculturally and economically important plants and related organisms (e.g., mycorrhizal fungi, nitrogen-fixing bacteria, etc.).

Fundamental knowledge in biochemistry, combined with genomics and molecular biology, will lead to practical applications such as enhancing the nutritional value of plant-based foods, increasing the productivity and fitness of crop plants, and utilizing plants as bioreactors to produce important industrial and pharmaceutical compounds. Thus, the combination of biochemistry and genomics will play an important role in the improvement and sustainability of agriculturally and economically important plants. Further information on shared biochemical processes and mechanisms among agricultural plant species is critical in transferring knowledge from model species to specific agriculturally and economically important plants. It can lead to development of new

biochemical tools and approaches, potentially building on genomics technology, for high throughput, efficient analysis of agricultural plant biochemical pathways.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are: contribute fundamental knowledge of biochemical pathways, processes, and mechanisms for potential utilization of genomic sequences in agricultural plants; create improved agricultural plant lines or populations based on use of basic biochemical knowledge and biotechnology; and develop at least one reference agricultural species for biochemical studies.

FY 2006 Priorities for Research

- 1) Primary and secondary metabolism (including cell wall and lignin formation, modification, and enzymology); and
- 2) Photosynthesis and respiration with particular emphasis on understanding and increasing photosynthetic efficiency.

Other Key Information

- Program priorities for FY 2006 have been narrowed and some priority areas will only be offered on alternate years. Research on nitrogen fixation will not be solicited in this year but will be solicited in odd-numbered fiscal years; thus research on nitrogen fixation will be solicited next year in FY 2007. Research on photosynthesis and respiration will be solicited on even-numbered fiscal years and thus will not be solicited in FY 2007. Proteomics research is no longer a separate research priority because it is recognized as a technology that can be used for systems-level analysis of plant biochemical processes and pathways.
- Research for this program should either focus on a biochemical process or pathway important for plant agricultural production systems or address a significant problem in agricultural plant biology using a predominantly biochemical approach. Use of small-scale proteomics or metabolomics is acceptable to gain insight into biological systems.
- Use of Model Species: Importance of the proposed research to agricultural productivity and sustainability should be clearly indicated in the application. Researchers are strongly encouraged to conduct research directly in a crop or forest species important to agriculture. Use of non-crop model systems is acceptable if tools are not yet available in the crop species of interest. However, the investigator must clearly indicate how such non-crop model studies are relevant to agriculture and food systems or forest species, the strategy for transferring the knowledge to these species for agricultural or forestry benefit, and the potential timeframe for such transfer.

- Applications that focus on plant environmental response and stress should be directed to the Agricultural Plants and Environmental Adaptation (22.1) Program. Applications that focus on plant cell biology, such as studies on cytoskeleton, membrane transport, signal transduction, and macromolecular trafficking, should be directed to the Developmental Processes of Agricultural Plants (53.0) Program unless the emphasis is on biochemistry, which will be supported by this program. For applications focused on metabolic engineering, the purposeful alteration of metabolic pathways to understand and use cellular pathways for chemical transformation, energy transduction, and supramolecular assembly, applicants should consider submission to the Interagency Metabolic Engineering Program (see, <http://www.metabolicengineering.gov>).
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

61.0 Agricultural Markets and Trade

Investigators are encouraged to contact Dr. Pat Hipple, National Program Leader, at (202) 401-2185 or phipple@csrees.usda.gov with questions.

The Agricultural Markets and Trade program will not be offered in FY 2006. The program will be offered in alternate years beginning in FY 2007. It is anticipated that the total amount of support in FY 2007 will be approximately \$4.8 million.

71.1 Improving Food Quality and Value

*Investigators are encouraged to contact Dr. Hongda Chen at (202) 401-6497 or Dr. Ram Rao at (202) 401-6010, National Program Leaders, regarding questions about suitability of research topics and integrated activities (or at hchen@csrees.usda.gov or rrao@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$300,000 (including indirect costs) for single investigator led projects for 2-4 years, and \$500,000 (including indirect costs) for multidisciplinary, multiple researchers, or multi-institution projects for 2-4 years. For integrated projects, grants will not exceed \$500,000. The total amount of support available for this program will be approximately \$6.5 million with up to \$2 million for integrated projects and \$4.5 million for research projects. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 1, 2005.*

Background

Improving food quality and value is essential in meeting the needs of the consumer and enhancing competitiveness in global markets and is driven by the application of physical, chemical and biological principles. The long term goals (10 years) of this program are to

formulate ingredients based on the knowledge of chemical interactions for better functionality of foods; develop new and improved technologies to produce better foods; and produce foods with optimum levels of health components. This program supports Research and Integrated Activities.

FY 2006 Priorities for Research and Integrated Activities (those that combine research, education, and/or extension)

- 1) Basic mechanisms involved in the interaction of macromolecules in the food matrix (e.g., protein-polysaccharide interaction) in controlling structure, texture, stability and flavor delivery in foods. This includes (a) the fundamental understanding of the mechanism of interaction of proteins, polysaccharides, and lipids in foods (e.g., covalent, ionic, hydrophilic, and hydrophobic, structures, kinetics); and (b) factors influencing the complexation and segregation of these macromolecules (e.g., processing environment, storage conditions and other food ingredients), and the resultant quality of foods (e.g., predictive modeling, food product quality);
- 2) Advanced and innovative processing engineering and technology that enhance food quality attributes, including development and applications of analytical characterization techniques of physical, chemical, biological, and sensory natures; and
- 3) Chemistry and fates of proven bioactive compounds in foods and food ingredients during processing, packaging, storage, distribution and delivery.

Other Key Information – Research and Integrated Activities

- Integrated projects should include functions research, education, and extension/outreach objectives (at least two of three functions should be integrated). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will bring favorable changes in foods available to the consumers and world markets. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- Multi- and cross-disciplinary approaches are highly encouraged.
- CSREES anticipates that this program will have two sections, namely (A) Food Engineering and Physical Processes; and (B) Food Chemistry, Biology and Product Development. A separate panel will be convened for each due to the

large number of applications expected. Researchers should indicate their review panel preference in Box 8 of the Proposal Cover Page by placing either an “A” or a “B” after the Program Number. If not indicated, the application will be assigned to a panel by the National Program Leaders.

- Applications addressing combined and inseparable quality and safety objectives will be entertained in this program. However, applications dealing primarily with issues of food safety should be directed to the appropriate Food Safety programs (NRI 32.0 or the Integrated Research, Education, and Extension Program: National Integrated Food Safety Initiative). Applications dealing with bioavailability, metabolism and mechanism of action of bioactive food components should be sent to the Bioactive Food Components for Optimal Health (31.0) Program. Applications dealing with consumer attitudes and behavior towards food should be directed to the Human Nutrition and Obesity (31.5) Program.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

71.2 Biobased Products and Bioenergy Production Research

*Investigators are encouraged to contact the National Program Leader, Dr. Chavonda Jacobs-Young at 202-401-6188 regarding questions about suitability of research topics (or cjacobs@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 3-4 years. The total amount of support available for this program will be approximately \$5.4 million. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, January 12, 2006.*

Background

The Biobased Products and Bioenergy Production Research Program supports fulfillment of Executive Order 13134 (*Developing and Promoting Biobased Products and Bioenergy*, available at <http://www.bioproducts-bioenergy.gov/about/eo13134.asp>), which calls for a tripling of U.S. use of biobased and bioenergy products by 2010 and the *Biomass Research and Development Act of 2000* (available at http://www.bioproducts-bioenergy.gov/about/bio_act.asp), which promotes research and development leading to the production of biobased industrial products. Also, the program through improving the utilization of forestry residuals supports the *Healthy Forests Restoration Act of 2003* that seeks to reduce forest wildfires through the creation of healthy forests by the thinning of undergrowth and trees in nearly 20 million acres of federal lands (available at <http://www.healthyforests.gov/index.html>).

Program activities will expand science-based knowledge and technologies to support the efficient, economical and environmentally friendly conversion of biomass, more specifically agricultural residuals into value-added industrial products and biofuels. The long term goals (10 years) for the program include increasing the production of chemicals and materials from biomass; increasing the inventory of biobased products for replacement of petroleum based products; and the reduction of costs associated with the conversion of biomass to industrial products by developing biocatalysts that can convert low cost agricultural feedstocks.

FY 2006 Priorities for Research

In FY 2006, the program will focus on biological processes for biomass conversion and post harvest biomass.

- 1) Improvement/Development of cost effective biocatalysts for hydrolyzing agricultural biomass to produce lower cost feedstocks for the production of industrial biobased products;
- 2) Improved production technologies for the biological modification of agricultural biomass to aid in the production of high-value industrial biobased products. The program is seeking applications which specifically address the pretreatment and conversion steps that limit the technical and economic efficiency of biological production of industrial biobased products from agricultural residuals; and
- 3) Innovative non-food uses for biomass, especially under-utilized co-products and agricultural residuals for the sustainable production of industrial products. This includes fundamental studies of biomass structures/properties to enhance product quality and processing characteristics.

Other Key Information

- Applications that focus on plant biochemistry should be directed to the Agricultural Plant Biochemistry (54.3) Program. Applications focused on plant genetics should be directed to Genetic Processes and Mechanisms of Agricultural Plants (52.2) Program. Animal feed, market analysis, and economic analysis applications should not be submitted to this program.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

NUTRITION, OBESITY, FOOD SAFETY AND QUALITY PROGRAM CLUSTER
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The Nutrition, Obesity, Food Safety and Quality program cluster addresses CSREES' strategic goals to *improve the Nation's nutrition and health*, *to enhance protection and safety of the Nation's agriculture and food supply* and *to enhance economic opportunities for agricultural producers*.

The maintenance of human health is significantly affected by the quantity and types of food consumed and foods that are contaminated with disease-causing microorganisms or toxins. Nutrition, obesity prevention and food safety are of paramount importance to the producer, processor, distributor, and consumer. The overall goals of the Nutrition, Obesity, Food Safety and Quality program cluster are to:

1. Improve our understanding of the behavioral and environmental factors that influence obesity and lead to the development and evaluation of effective interventions for obesity prevention;
2. Contribute to our knowledge of the requirements and bioavailability of food components and factors (including food processing technologies and interrelationships among dietary components) that impact optimal human nutrition or food quality; and
3. Increase our understanding of disease-causing pathogens and toxins, the risk factors that influence foodborne organisms and food safety, and the risk factors that lead to the development and implementation of mitigation or control strategies.

Data generated from these studies will be used for updating dietary recommendations, formulating national nutrition and food safety policy, and stimulating new product developments by the food industry.

In FY 2006, the NRI invites applications in the following cluster of programs related to Nutrition, Obesity, Food Safety and Quality:

Human Nutrition Programs

- 31.0 Bioactive Food Components for Optimal Health
- 31.5 Human Nutrition and Obesity

Food Safety Programs

- 32.0 Food Safety
- 32.1 Epidemiological Approaches for Food Safety

Food Science and Technology Programs

71.1 Improving Food Quality and Value – *refer to program description in Agricultural Production and Value-Added Processing program cluster*

75.0 Nanoscale Science and Engineering for Agriculture and Food Systems

NUTRITION, OBESITY, FOOD SAFETY AND QUALITY PROGRAMS

31.0 Bioactive Food Components for Optimal Health

*Investigators are encouraged to contact Dr. Etta Saltos, National Program Leader, at (202) 401-5178 regarding questions about the suitability of research topics (or at esaltos@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4.2 million. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 13, 2005.*

Background

The consumption of a nutritious diet is important for maintaining long-term health and decreasing the risk for chronic disease. The primary objective of this program is to support research to improve our understanding of the role of foods and their biologically active components in promoting health. Bioactive food components are constituents in foods other than those needed to meet basic human nutritional requirements that are responsible for changes in health status. This program also continues to support research regarding the function of nutrients that have not been extensively studied. Program objectives are relevant to the research recommendations outlined in the Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2005.

To meet these identified needs of agriculture, the long-term (10-year) goal of the program is to provide evidence concerning health effects of bioactive food components that can be used by scientific organizations in setting dietary reference intakes and tolerable upper limits for such components (e.g., omega-3 fatty acids, conjugated linoleic acid, soy phytoestrogens, resveratrol). The program will also coordinate with other NRI programs in supporting the development of novel, health-enhancing foods.

FY 2006 Priorities for Research

- 1) Mechanistic studies of the bioavailability, function, efficacy and safety of bioactive dietary components and neglected nutrients at levels which would be expected to be consumed in the diet;
- 2) Interrelationships among bioactive dietary components and/or nutrients in promoting health; and

3) Mechanisms underlying the relationship between diet and optimal health, e.g., the influence of bioactive food components on the immune, cardiovascular, gastrointestinal and central nervous systems.

Other Key Information

- Multi-disciplinary approaches are encouraged.
- Projects to develop biomarkers to measure human health outcomes or projects that use agriculturally important domestic species as models for human health outcomes are encouraged.
- Support will not be provided for research on dietary requirements as related to therapies for metabolic disorders, infectious diseases, cancer, and alcohol-related disorders, or for the establishment, expansion, or maintenance of dietary databases.
- Surveys of the nutritional status of population groups are not acceptable for this program, but may qualify for submission to the Human Nutrition and Obesity (31.5) Program.
- Applications dealing with food processing techniques or production of foods should be directed to the Improving Food Quality and Value (71.1) Program unless they are clearly oriented toward dietary effects on optimal human health.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

31.5 Human Nutrition and Obesity

*Investigators are encouraged to contact Dr. Etta Saltos at (202) 401-5178 or Dr. Susan Welsh at (202) 720-5544, National Program Leaders, regarding questions about suitability of research topics and integrated activities (or at esaltos@csrees.usda.gov or swelsh@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$500,000 (including indirect costs) for research projects and \$1.5 million (including indirect costs) for integrated projects for periods of 2-4 years. Budget requests over \$1 million are expected to be multi-investigator and/or multi-institutional. The total amount of support available for this program will be approximately \$11 million with approximately \$10 million for integrated projects and \$1 million for research projects. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, June 15, 2006.*

Background

This crosscutting program addresses the complex problem of obesity prevention. Projects funded by this program are intended to lead to a better understanding of the behavioral and environmental factors that influence obesity and to the development and evaluation of effective interventions to prevent obesity. Obesity is the number one nutritional problem in the U.S. Food is an integral part of the process that leads to obesity, and USDA has a unique responsibility for the food system in the U.S.

To meet the identified needs of agriculture, the long-term (10 year) goals for this program are: the behavioral and environmental factors that influence obesity will be sufficiently well understood to develop effective obesity prevention strategies; valid behavioral and environmental instruments for measuring progress in obesity prevention will be available; and effective strategies for preventing overweight and obesity will be available. The ultimate goal of the program is to stem the rising tide of obesity.

The milestones toward reaching these long-term goals include: theories on how behavioral and environmental factors influence obesity will be in development; testing will be underway on the validity of behavioral and environmental measures for evaluating success in obesity prevention; and testing will be underway on the effectiveness of strategies for preventing overweight and obesity.

FY 2006 Priorities for Integrated Activities (those that combine research, education, and/or extension)

- 1) Improve our understanding of the behavioral and environmental factors that influence obesity;
- 2) Develop behavioral and environmental instruments for measuring progress in obesity prevention; and
- 3) Develop effective intervention strategies for preventing obesity.

Examples of priority focus areas for the study of factors influencing obesity are: social and psychological factors, including the development of self-esteem, self-efficacy and resiliency, family and community influences and attitudes toward food, physical activity and health; the role of lifestyle, including physical activity, cultural and ethnic factors and the influence of past dietary patterns; the role of educational factors, cognitive ability and informational resources; and the influence of economic factors and public policy issues, including the community environment, food availability, accessibility, cost, individual income and propensity to save, food insecurity, time constraints and public and private assistance programs.

FY 2006 Priorities for Research

- 1) Epidemiological studies that may involve secondary analyses of large, national databases.

Other Key Information - Research and Integrated Activities

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- Because food is an integral part of the development of obesity, all projects should address some aspect of food from production to consumption.
- It is expected that most projects will be multidisciplinary because obesity is such a multifaceted problem.
- The development of effective instruments for assessing progress in preventing obesity may necessitate the development of new instruments or the modification and validation of existing ones. Intervention may target individuals, groups, market segments, or communities. Of special interest are population groups at increased risk for the development of obesity, such as children, racial and ethnic minorities and those who are economically or educationally disadvantaged.
- Applications that focus on the use of functional foods in preventing obesity should be directed to Bioactive Food Components for Optimal Health program (31.0). Applications that focus on food processing techniques or production of foods should be directed to the Improving Food Quality and Value Program (71.1). Applications that focus primarily on medical therapies for disease should not be submitted to this program.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

32.0 Food Safety

*Investigators are encouraged to contact Dr. Chris Wozniak, National Program Leader, at (202) 401-6020 regarding questions about suitability of research topics (or at cwozniak@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$400,000 (including indirect costs) for project periods of 2-4 years. The total amount of support availability for this program will be approximately \$4.7 million. Program Deadline: Applications must be **received by** 5:00 P.M. Eastern Time, December 6, 2005.*

Background

One of the main objectives of this program is to fund research efforts which result in a demonstrable reduction in food-borne illness. This program supports hypothesis driven research - that seeks to increase our knowledge of microbial ecology with regard to the routes of contamination of food; this includes on-farm investigations, post-harvest incidence, processing and distribution of food. Aspects of microbial ecology that provide for avenues of intervention and mitigation of food-borne illnesses or toxicities also fit this program.

The long-term (10 year) goals of this program are to reduce the number of food-borne illnesses in the U.S. and provide for the safe and economic regulation of food safety issues. A primary function of this program is to provide data and information to risk assessors investigating emerging and ongoing food safety problems. In this regard, areas of focus will be assessed year to year to re-examine priorities and adjust the emphasis in response to emerging issues, as appropriate.

FY 2006 Priorities for Research

- 1) Listeria monocytogenes in ready-to-eat (RTE) meats: Proposed studies need to address the factors which influence colonization and multiplication in or on RTE meats, concentration and types of treatments / antimicrobials / bacteriocins necessary to reduce cell numbers, or conditions which influence gene expression relevant to food-borne illness.
- 2) Escherichia coli on carcasses and in ground beef: Proposed studies need to address mitigation measures aimed at reducing carcass contamination, carryover or cross contamination to processing of ground beef; multiplication within ground beef products; or sensor / detection methodologies linked to practical mitigation measures.
- 3) Salmonella enterica or Campylobacter jejuni in poultry: Proposed studies need to address the prevalence of *Salmonella enterica* or *Campylobacter jejuni* on farm and the methods of transmission to poultry; effective mitigation measures during processing and distribution; or genetics of strain development for antibiotic resistance and other virulence determinants.

Other Key Information

- Surveillance as a principal objective is not suitable for this program. Research to quantify or monitor the incidence of organisms responsible for food-borne illness must also seek to ascertain other aspects of virulence, pathogenicity, biochemistry of toxin production, ecology, or genetics in addition to the enumeration of incidence, pathogen load or frequency.
- Applications that contain hypothesis driven research targeting improved or novel detection methods for the designated microorganisms will be considered for funding, however, they must be of direct value in mitigating, reducing or managing the offending agent or disease causing entity, or in providing a greater understanding of the routes of food contamination and the biology of the offending agent. Research aimed solely at development of a detection methodology will not be considered for review. Applicants are encouraged to speak with the National Program Leader before submission of applications regarding detection methodologies. Coordinating the proposed study with the appropriate industry is highly recommended.
- Applications may be structured from a pre-harvest or post-harvest approach as appropriate. Economic or model-based analyses of these priority areas will also be considered for review, especially if they address issues of regulatory burden and impacts on trade.
- Applications dealing with food processing techniques or the utilization and production of foods designed to improve food quality should be directed to the Improving Food Quality and Value (71.1) Program. Food safety applications examining the epidemiological aspects of microbes associated with food-borne illness should be directed to the Epidemiological Approaches to Food Safety (32.1) Program.
- If a project is funded, beginning in the first year of funding, at least one member of each project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

32.1 Epidemiological Approaches for Food Safety

Investigators are encouraged to contact Dr. Mary E. Torrence, National Program Leader, at (202) 401-6357 regarding questions about suitability of research topics and integrated activities (or at mtorrence@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$1.2 million (including indirect costs) for research projects and \$1 million (including indirect costs) for integrated projects for project periods of 3-4 years. The total amount of support available for this program will be approximately \$4 million with approximately \$1 million for integrated

*projects and \$3 million for research projects. Program Deadline: Applications must be **received by** 5:00 pm, Eastern Time, December 6, 2005.*

Background

Research that develops an understanding of the multiple factors involved in food safety and provides the science-based data for policy decisions requires epidemiological studies. Epidemiological studies of pre- and post-harvest areas are vital to identify and characterize pathogenic organisms, including their sources and reservoirs; and to understand the transmission of the pathogen along the entire continuum. The identification of risk factors for exposure to and infection by these pathogens can be accomplished by several different epidemiological research methodologies. Environmental and ecological data are needed to increase our understanding of disease-causing microorganisms, their products, and naturally occurring contaminants in meats, poultry, seafood, and fresh fruits and vegetables.

Epidemiologic research provides the scientific approach to study the distribution and determinants of disease and health-related events in a population and uses that analysis for prevention and control. Most of the research looks at interactions among the environment, agriculture, and human populations with the goal of decreasing foodborne disease as well as antimicrobial resistance.

The long-term goals for this program are: enhance the epidemiologic methods available for the study of foodborne diseases and other public health issues; advance the understanding of the epidemiology of foodborne disease and the food system; provide recommendations for specific intervention strategies/prevention and control programs for foodborne disease and antimicrobial resistance; provide a methodology for the measurement of impact/outcome; and provide the ability to respond to and evaluate emerging issues in food safety and public health (including food biosecurity, antimicrobial resistance).

FY 2006 Priorities for Research

- 1) Innovative methods or studies to quantify the effect of existing interventions or management strategies on foodborne pathogens or disease;
- 2) Development of new quantitative outcome measures for the impact of intervention or management strategies on microbial contamination or food safety. This includes innovative research on linking pre-harvest food safety with potential public health outcomes; and
- 3) Identification of new risk factors or quantitative evaluation of existing risk factors that may affect prevalence, transmission, or persistence of foodborne organisms or the prevalence of disease. These applications must be innovative and hypothesis-driven and must show applicability to potential interventions.

FY 2006 Priority for Integrated Activities (those that combine research, education, and/or extension)

1) Innovative methods or studies to quantify the effect of existing interventions or management strategies on foodborne pathogens or disease. This should be a multifunctional project in which research will be combined with a summer institute for epidemiology and food safety. The audience could be graduate or professional students and professionals interested in continuing education.

The requirements for this application are:

- Must have multiple class offerings but all should be focused around a specific theme in food safety;
- Must have a major concentration on epidemiology;
- Must demonstrate a detailed plan for evaluating the impact of this institute; and
- Must be a multi-institutional effort; therefore, instructors will be leading experts from various universities and organizations.

Other Key Information - Research and Integrated Activities

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- Population-based studies that provide data for identified data gaps from risk assessments or provide epidemiologic data for on-going risk assessments will be considered. Pure risk assessment methodologies or modeling studies are not eligible. Surveillance studies alone are not eligible.
- Applications must have a primary central focus on population-based epidemiological studies. The applications must have an epidemiologist as an active participant of the study, either as a co-investigator or a collaborator.

- Projects termed “molecular epidemiology” will not be eligible for this program if they are simply the development or refinement of a molecular method or the characterization or creation of genotype strain libraries. Acceptable applications must fit the definition of an epidemiologic project; that is, “molecular epidemiology” would be the use of molecular techniques or previously collected data to study or quantify the distribution and determinants of health-related states in specified populations. Molecular studies should clearly demonstrate application to the control of those health problems.
- Applications concentrating strictly on laboratory methods or techniques will not be accepted. Method developments that are hypothesis-driven should be directed to the Ensuring Food Safety (32.0) Program. Simple prevalence studies or studies that have already been done numerous times are not encouraged.
- Priority will be given to projects that involve collaboration with institutions, organizations, and communities of interest. Strong partnerships are encouraged, such as those that form consortiums or collaborative networks. Innovative multidisciplinary collaborations and partnerships are those designed to build solutions to understanding the interrelationships of the various factors that affect the safety of our food supply. Applications are encouraged that integrate the knowledge of multiple disciplines, i.e., veterinarians, food microbiologists, epidemiologists, public health specialists or other scientific disciplines, in order to gain the comprehensive understanding needed to solve complex problems.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

75.0 Nanoscale Science and Engineering for Agriculture and Food Systems

*Investigators are encouraged to contact Dr. Hongda Chen, National Program Leader, at (202)401-6497 regarding questions about suitability of research topics (or at hchen@csrees.usda.gov to arrange a telephone consultation). Grants for exploratory research with emphasis on high risk/high return “proof of concept” studies will not exceed \$100,000 (including indirect costs) for one year. Grants for standard research projects with emphasis on extending the proven-concepts, both originated from the NRI supported research or broad National Nanotechnology Initiative (NNI) supported studies, to a more comprehensive advancement of knowledge, will not exceed \$300,000 (including indirect costs) for single investigator led projects for 2-4 years, and \$750,000 (including indirect costs) for multidisciplinary projects for 2-4 years. The total amount of support available for this program will be approximately \$2.5 million. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, January 19, 2006.*

Background

Nanoscale science, engineering and technology, herein referred to as nanotechnology for brevity, is the fundamental understanding and technological advances arising from the exploitation of new physical, chemical, and biological properties of matter at the length of scale of approximately 1 to 100 nanometers. Exciting novel structures, phenomena, and processes have been observed at the nanoscale in recent years, and new experimental, theoretical and simulation tools have been developed for investigating them.

Nanotechnology, as a new enabling technology, has the potential to revolutionize agriculture and food systems. In a concerted effort with NNI, this interagency program spearheads nanoscale science and engineering research relevant to agriculture and food systems.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are: demonstrate feasibility and prototypes of nano-based devices and systems, highly sensitive and specific detection arrays, and intervention technologies for food safety and biosecurity; food product design for targeted delivery and controlled release of functional micronutrients and bioactive compounds for optimal health; and nano-bio-barcode and other nano-based devices for product identity preservation and tracking.

FY2006 Priorities for Research

- 1) Nanoscale recognition, reception and transmission for developing nanobased sensors suitable for the targets important for food safety and agriculture biosecurity;
- 2) Novel targeted delivery and controlled release mechanisms suitable for food matrices; and
- 3) Understanding of nanoscale mechanisms to support the development of nano-based detection and tracking technologies for food and agricultural product identity tracking and preservation.

Other Key Information

- Applications dealing with safety, health, and environmental implications, both beneficial and risk oriented, should be directed to the EPA/NSF led interagency solicitation under the NNI. Applications dealing with broad societal impacts of nanotechnology related to agriculture and food systems are encouraged to submit to NSF led cross-disciplinary research program (<http://nano.gov/>.)
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

AGROECOSYSTEMS PROGRAM CLUSTER

The Agroecosystems program cluster primarily addresses CSREES' strategic goal *to protect and enhance the Nation's natural resource base and environment*. It also supports CSREES' strategic goals of *enhancing economic opportunities for agricultural producers, supporting increased economic opportunities, improving quality of life in rural America*, and *enhancing protection and safety of the Nation's agriculture and food supply*.

Agroecosystems are inherently complex systems influenced by both natural and social processes. The fundamental concept behind this cluster of programs is the application of ecological principles to agricultural systems, including the surrounding landscapes and human communities. The concept of agroecosystems can be applied at a range of spatial scales including the field, the farm level enterprise, the landscape, watershed, or community scale within agricultural, rangeland, or forested systems. Accordingly, agricultural ecosystems include ecological, economic, and social components and can also include embedded natural ecosystems. Agricultural systems, as managed systems involving human control and use of inputs, are influenced by and, in turn, influence the natural systems surrounding them.

Human well-being is inextricably linked to the sustainable use and management of agroecosystems. The fundamental purpose of agriculture is to control ecological structure, function, and processes so as to favor human needs. The concept of sustainable agroecosystem management allows for achieving the traditional agricultural goal of production while balancing the goals of conservation and protection of natural resources, mitigation of environmental impacts, and maintenance of ecosystem services. One benefit of the agroecological approach is that it accommodates a broad range of performance criteria including ecological goods and services, sustainability, food security, economic viability, resource conservation, social equity, as well as increased production that provide focus for the various programs.

The overall goal of the Agroecosystem program cluster is to support research and integrated projects that will address the design or function of productive agriculture that sustains yields and rural prosperity while minimizing the negative environmental impacts of agricultural practices and technologies on surrounding natural ecosystems. Addressing the degree to which agriculture is sustainable is a critically important goal relevant to all USDA mission areas.

In FY 2006, the NRI invites applications in the following cluster of programs related to Agroecosystems:

Natural Resources Programs:

- 25.0 Soil Processes
- 26.0 Water and Watersheds
- 28.0 Air Quality

Systems Programs:

- 23.1 Managed Ecosystems
- 51.9 Biology of Weedy and Invasive Species in Agroecosystems

Human Dimensions Programs:

- 62.0 Rural Development
- 66.0 Agricultural Prosperity of Small and Medium-Sized Farms

AGROECOSYSTEMS PROGRAMS

25.0 Soil Processes

*Investigators are encouraged to contact Dr. Nancy Cavallaro, National Program Leader, at 202-401-4082 regarding questions about suitability of research topics (or at ncavallaro@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$500,000 (including indirect costs) for project periods of 2-4 years. Budget requests over \$350,000 are expected to be multi-investigator and/or multi-institutional. The total amount of support available for this program will be approximately \$3.5 million. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, January 19, 2006.*

Background

Soil is a vital natural resource that not only sustains plant and animal productivity, but also has profound effects on the health and quality of the environment. As such, agriculturally-related sustainability hinges on the interactions among the biological, chemical and physical properties and processes in this below-ground ecosystem. Significant strides have been made in understanding, for example, the impact of organic amendments on soil microbial biomass and the rate of water infiltration. However, more science-based knowledge is needed to fill gaps regarding the combined interactions of the properties and processes affecting soil quality as it relates to agricultural sustainability.

Understanding the complex interactions among the physical, chemical and biological characteristics of, and abiotic and biotic processes in soils, requires an interdisciplinary approach. These soil characteristics impact the availability of water and nutrients to plants and other organisms in the soil ecosystem, and subsequently plant, animal and human health and well-being. At the same time, it is critical to recognize the spatial and temporal variability among soil properties and processes which also affect agricultural productivity and sustainability. Below and above-ground factors and activities, including management practices such as tillage, amendments and cropping sequence, also modulate properties and functions in the soil ecosystem. Science-based knowledge that leads to the clarification and understanding of the interactions among soil physical, chemical and biological processes is needed. Ultimately, this should result in the application of such

science-based knowledge to the development of practical tools and strategies that enhance agricultural productivity while negating or ameliorating detrimental effects on the natural resources, including soils.

To meet these needs, the long-term goal (10 year) for this program is to generate science-based knowledge that will lead to development, adoption and implementation of practices and tools that will ensure improved soil quality through the efficient use of water and nutrients by soil flora and fauna. Improvement in soil characteristics including quality and reduction of erosion will increase productivity and enhance sustainability while protecting and enhancing the Nation's natural resources and environment.

FY2006 Priorities for Research

- 1) Interdisciplinary studies of the interrelationships among soil physical, chemical and biological characteristics and processes related to soil quality and sustainability, especially regarding the efficient use of water and nutrients by soil flora and fauna and the relationship to agricultural productivity and environmental quality; and
- 2) Development and or application of new or improved technologies, methodologies, tools or strategies to enhance the understanding of soil quality, focusing specifically on the efficient use of water and nutrients by soil flora and fauna and the relationship to agricultural productivity and environmental quality.

Other Key Information

- Applicants must articulate the relevance of their research to agriculture, range and forestry.
- Proposed projects should be interdisciplinary and address relevant biotic and abiotic factors and processes. The project team should include expertise in biological and physical sciences.
- Fate and transport will be addressed in the Water and Watersheds (26.0) Program. Applications addressing water quality and having outreach and education components should be directed to the CSREES National Integrated Water Quality Program (www.csrees.usda.gov/fo/funding.cfm).
- Applications addressing soil insect and arthropod pests or soil borne plant pathogens, and have outreach and education components, should be directed to the CSREES Integrated Research, Education, and Extension Program in Pest Management (www.csrees.usda.gov/fo/funding.cfm).
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

26.0 Water and Watersheds

*Investigators are encouraged to contact Ms. Mary Ann Rozum, National Program Leader, at (202) 401-4533, regarding questions about suitability of research topics (or at mrozum@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$400,000 (including indirect costs) for research projects for project periods of 2-4 years. The total amount of support available for this program will be approximately \$5.3 million. Program Deadline: Applications must be **received by** 5:00 P.M. Eastern Time, January 19, 2006.*

Background

The goals of the Water and Watersheds program are to protect and enhance the natural resource base and environment by improving and maintaining healthy watershed habitat and water supply protection; enhance economic opportunities by reducing economic liability from water contamination; improve the quality of life in rural America through adequate clean water supplies; and protect food safety through clean irrigation and livestock drinking water supplies.

The long-term (10 year) goals for this program are: reduce pathogens such as bacteria, viruses and protozoa in waters derived from agricultural and rural watersheds; and maintain adequate water supplies for agricultural crop and livestock production and rural use.

FY 2006 Priorities for Research

- 1) Understand the source, fate and transport of pathogens such as bacteria, protozoa and viruses in soil and water systems; with special emphasis on *Salmonella*, *Cryptosporidium*, and rotaviruses; and
- 2) Identify producer management behaviors and/or economic and policy incentives and strategies for producers that improve agricultural water conservation, including livestock and poultry production and crop water use efficiency.

Other Key Information

- Applications addressing excess nutrients in water resources should be directed to the CSREES National Integrated Water Quality Program (Section 406) (www.csrees.usda.gov/fo/funding.cfm).
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

28.0 Air Quality

Investigators are encouraged to contact Dr. Ray Knighton, National Program Leader at (202) 401-6417 regarding questions about suitability of research topics and integrated activities (or at rknighton@csrees.usda.gov to arrange a telephone consultation).

*Grants for this program will not exceed \$500,000 (including indirect costs) for research and \$500,000 (including indirect costs) for integrated projects for project periods of 2-4 years. The total amount of support available for this program will be approximately \$5 million with approximately \$3 million for integrated projects and \$2 million for research projects. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, June 15, 2006.*

Background

Agriculture, forest, and range production practices have increasingly become subject to state and federal regulations that are meant to protect air resources. In many instances, data do not exist or are not representative of agricultural industries for the purpose of estimating emissions to the atmosphere of regulated pollutants or of public nuisances such as odors and fugitive dust.

The long-term (10 year) goals of this program are: a) develop emission data for agriculture, forest, and range production practices that will lead to emission reduction targets, based on sound science, that will significantly improve air quality and protect human and environmental health; b) develop mitigation strategies that will increase adoption of best management practices to reduce agricultural emissions; c) and improve understanding of odor, gases, and particulate matter (PM) measurement, production, flux, fate and transport that will lead to a better understanding of the environmental fate of agricultural atmospheric emissions.

FY 2006 Priorities for Integrated Activities (those that combine research, education, and/or extension)

1) Measurement and Monitoring Integrated projects are solicited to improve measurement protocols/instrumentation and remote sensing to measure and characterize particulate matter and gases for within field/facility and edge-of-field/facility boundaries. Emission data for particulates, odors, and gases is of primary concern and is needed for all aspects of production practices and naturally occurring events such as wind and wet deposition to update existing inventories. High priority emission sources and corresponding constituents are:

- animal feeding operations (especially ammonia, PM, volatile organics, hydrogen sulfide, and methane)
- tillage and nutrient management (especially PM, ammonia and nitrous oxide)
- controlled burning
- production, harvest and post-harvest practices

Additional priority will be given to projects that characterize the physical, chemical, and biological nature of agriculture, forest and range source aerosols. Projects should identify whether they will address fine particulate matter (< 2.5 microns in diameter) or larger (up to 10 microns in diameter). Projects to determine the efficacy of techniques for monitoring and characterizing agriculturally important odors, odorants, and aerosols is also requested.

2) Fate and Transport Integrated projects are needed on the fate and transport of emitted particulates and gases with specific emphasis placed on ammonia. Improved models are needed to predict movement and dispersion of air pollutants from production practices and management operations. Process-based mechanistic models using mass balance techniques for component processes of the whole enterprise are of specific interest.

3) Mitigation Integrated projects on the efficacy of methods for mitigating emissions of nitrogen and other agricultural air pollutants and the development of best management practices are solicited. Projects will be considered that evaluate the efficacy of conservation practices and other control technologies to reduce particulate and gaseous emissions.

FY 2006 Priorities for Research

- 1) Characterizing particulate matter and gases (see priority 1 above); and
- 2) Fate and transport (see priority 2 above).

Other Key Information - Research and Integrated Activities

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- If a project is funded, beginning in the first year of funding, at least one member of each project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

23.1 Managed Ecosystems

*Investigators are encouraged to contact Dr. Diana Jerkins, National Program Leader, at (202) 401-6996 regarding questions about suitability of research topics and integrated activities (or at djerkins@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$400,000 (including indirect costs) for research projects and \$500,000 (including indirect costs) for integrated projects for project periods of 2-4 years. The total amount of support available for this program will be approximately \$4 million with approximately \$1.5 million for integrated projects and \$2.5 million for research projects. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 8, 2005.*

Background

The goals of the Managed Ecosystems program are to protect and enhance the natural resource base and environment through the appropriate use and management of ecological systems; enhance economic opportunities by increasing productivity and ecosystem services; and improve the quality of life in rural America through improved environmental quality.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are: develop, quantify and verify predictive, multifunctional agroecosystem management models, and conduct experimental studies that will concurrently optimize resource use efficiency while increasing product and environmental quality; and develop indicators for land resource use assessment and quantify agroecosystem changes. Over the long term, projects will involve the design and verification of managed ecosystems, and dissemination and use of innovative management strategies.

This program will take a systems approach. Systems research is multidisciplinary, and focuses on the interrelationship between management practices and response to biological, physical, economic, and social processes. A systems approach will be able to demonstrate agricultural sustainability and identify points of sensitivity and synergy between system components. Managed ecosystems that will be designed and evaluated must be multi-functional (i.e. provide agricultural product and ecosystem services, and lead to increased sustainability (system balance) over time).

FY 2006 Priorities for Research

- 1) Biogeochemical processes to improve ecological efficiency within agricultural systems or the interface between agricultural and natural systems;
- 2) Identify emergent properties (integrated functions) of co-managed agroecosystem components or multiple agroecosystems; and

- 3) Monitor ecosystems to quantify increased efficiency of resource use (i.e., resource conservation per production unit), improved production quality, and improved environmental quality (i.e., reduction or non-pollution attributes).

Examples of project activities include: understanding how to have more efficient resource use while increasing product quality; quantify development of synergistic relationships between agroecosystem parameters (ex. decreased water use-increase nutrient level-increase habitation levels); understanding how management changes impact environmental quality; quantifying linkages between agricultural and natural systems biological processes and functions; understanding changes in productivity and ecosystem services, (ex. biodiversity, carbon sequestration); and quantifying increased integration of agricultural productivity and environmental quality issues.

FY 2006 Priorities for Integrated Activities (those that combine research, education, and/or extension)

- 1) Agroecosystem-based management strategies, with emphasis on information dissemination and training on management models, as well as development of curriculum on systems research procedures and/or ecological systems functions.

Other Key Information - Research and Integrated Activities

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- Development of management strategies should be limited to the following areas: 1) crop, 2) range/prairie, 3) forest, 4) grazing and/or 5) interface of rural/suburban agroecosystems.
- If the project involves model development, the model could conceptualize either new or improve existing models. The model should link the following parameters: resource use efficiency, product quality, and environmental quality. The project must also include field testing of the model.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

51.9 Biology of Weedy and Invasive Species in Agroecosystems

*Investigators are encouraged to contact Dr. Michael Bowers, National Program Leader, at (202) 401-4510 regarding questions about suitability of research topics and integrated activities (or at mbowers@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$500,000 (including indirect costs) for research projects and \$500,000 (including indirect costs) for integrated projects for project periods of 2-4 years. The total amount of support available for this program will be approximately \$3.6 million with approximately \$1.1 million for integrated projects and \$2.5 million for research projects. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, February 15, 2006.*

Background

It has been estimated that approximately 50,000 species of plants and animals have been introduced into the U.S., and that they cause environmental damage and losses adding up to more than \$100 billion/yr. Non-indigenous weeds alone cost U.S. agriculture somewhere between \$7- 27 billion/yr. Invasive species threaten biodiversity, habitat quality, and ecosystem function. It is estimated that invasive species have contributed to the decline of 42% of the U.S. endangered and threatened species. Exotic, invasive species are a particularly prevalent feature of agroecosystems, and are a threat to food and fiber production, the economic costs of which sum to billions of dollars each year.

The long-term (10 year) goal of the program is to support inter-disciplinary experimental, observational, theoretical, and modeling studies of invasive species that lead to ecological and economic models in cost/benefit analyses of different management, control and elimination strategies.

FY 2006 Priorities for Research

- 1) Research that establishes cause and effect relationships between the abundance of invasive species and past and current land use.

FY 2006 Priorities for Integrated Activities (those that combine research, education, and/or extension)

- 1) The importance of different cultivation and nutrient management regimes, disturbance (including fire, pests and grazing), and other landscape features (presence of roads, degree of fragmentation) and/or processes (source-sink population dynamics) on invasive species.

Other Key Information – Research and Integrated Activities

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs

- to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- The program will consider activities (research and integrated) that focus on the biology of exotic, invasive plant and animal species of economic impact to agriculture. The research proposed should be performed within an agricultural setting emphasizing crop production, managed forests, rangeland, or other wild lands of conservation significance. The research could employ a population or community or ecosystem perspective, or some combination. Collaborative teams of land managers, weed biologists, population biologists, ecologists, physiologists, biogeochemists, and wildlife managers or those with expertise in simulation modeling and GIS are encouraged to apply.
 - **Project Directors wishing to apply to the Biology of Weedy and Invasive Species in Agroecosystems program must submit a letter of intent to Michael Bowers (mbowers@csrees.usda.gov) by COB on December 16, 2005. Letters should contain: (1) a descriptive title of the proposed project; (2) names and roles of the PD(s) and other key personnel, along with their institutions; and, (3) a brief statement of approaches and objectives (500 words or less). These letters will be reviewed for relevance for this program and invitations to submit a full application will be issued promptly.**
 - If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

62.0 Rural Development

*Investigators are strongly encouraged to contact Pat Hipple, National Program Leader, at (202) 401-2185 regarding questions about suitability of research topics (or at phipple@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$500,000 (including direct costs) for research projects of 2-4 years. The total amount of support available for this program will be approximately \$4.8 million. Beginning with this announcement, the Rural Development program will be offered in alternate years. Program Deadline: Applications must be **received by 5:00 P.M. Eastern Time, February 1, 2006.***

Background

Rural America is home to 20 percent of the nation's population, 49 million citizens, and comprises 75 percent of the nation's land. More than 2,000 counties, almost 66 percent of all counties in the U.S., serve rural America. Rural people and places are challenged by profound social, economic, technological, and demographic changes. Although endowed with physical, natural, human, and organizational assets, many factors—geography, infrastructure, history, economy, leadership, civic engagement, and institutional capacity—affect the ability of rural people and rural communities to mobilize these assets to address the changes and challenges they face and to capitalize on new opportunities. While agriculture is still critical to many areas, it is not sufficient to ensure the prosperity of rural people and places.

One effort to enhance the prosperity of rural people and places was to establish the Rural Development grant program within the National Research Initiative of the USDA. The Rural Development program supports USDA/CSREES Strategic Goal # 2: Support increased economic opportunities and improved quality of life in rural America. In the next ten years, the Rural Development program will pursue three objectives to increase economic opportunity and improve rural quality of life. These objectives include: 1. a measurable reduction in the erosion of rural services and infrastructure through application of successful models of rural and community development; 2. a measurable reduction in the rural broadband gap through strategies successful in promoting infrastructure; and, 3. the successful dissemination of new approaches to enhance rural economic opportunities, rural governance and civic engagement, and local government response to devolution.

FY2006 Priority for Research

During FY2006, the Rural Development program will pursue a single research priority designed to achieve these three objectives. This priority is the:

1) Examination of social, economic, demographic, and/or policy conditions that foster or impede improved quality of life for rural residents, including recommendations for policies and practices effective in creating and sustaining rural community vitality and prosperity.

Other Key Information

- Applications addressing this priority are invited from any social or behavioral science discipline, business, management, or engineering, etc., or combination thereof. A wide range of theoretical and methodological approaches is welcome, but applicants are strongly advised to specify their theory and methods on a level that a multi-disciplinary review panel will understand.
- Applications are expected to present a new, creative, and innovative perspective or approach to the topic, to explain the unique contribution the project will make

to our understanding and practice, to discuss the broader impacts of the project, and to provide a persuasive argument why federal funding should be used to support this project.

- Applications with topics specific to small and mid-size farm viability or rural agricultural development should be directed to the Agricultural Prosperity for Small and Medium-Sized Farms (66.0) Program.
- If a project is funded, beginning in the first year of funding at least one member of each project team will be required to attend annual Project Director meetings. Reasonable travel expenses should be claimed as part of the project budget.

66.0 Agricultural Prosperity for Small and Medium-Sized Farms

*Investigators are encouraged to contact Dr. S. (Suresh) Sureshwaran at (202) 720-7536 or Dr. Diana Jerkins at (202) 401-6996, National Program Leaders, regarding questions about suitability of integrated activities (or at ssureshwaran@csrees.usda.gov or djerkins@csrees.usda.gov to arrange a telephone consultation). Grants for this program will not exceed \$500,000 (including indirect costs) for integrated projects for project periods of 2-4 years. Budget requests over \$400,000 are expected to be multi-investigator and/or multi-institutional. The total amount of support available for this program will be approximately \$5 million. Program Deadline: Applications must be **received by** 5:00 P.M., Eastern Time, December 8, 2005.*

Background

Small and medium-sized farms are challenged by limited economic opportunities and increasing concerns about environmental quality, as indicated by their low value of agricultural products sold, decreasing share of the food dollar, and the perceived trade-off between agricultural sustainability and economic viability. In recent years, these challenges have been magnified by changes in market conditions caused by tremendous demographic shifts, new global markets and vertical integration, and the increasing competition for farm land for non-agricultural uses. Therefore, the purpose of this program is to foster interdisciplinary studies to improve our understanding of the interactions between the economic and environmental components important to the long-term viability, competitiveness and efficiency of small and medium-sized farms (including social, biological and other components, if necessary). These include small and medium-sized dairy, livestock, crop and other commodity operations. While small and medium-sized farms account for less than 25 percent of the value of all agricultural products sold in the U.S., the long-term viability of these farms is critical to the prosperity of rural people and places as these farms account for approximately 92 percent of all farms in the U.S. Therefore, the program will also foster interdisciplinary studies to enhance income accruing to small and medium-sized farms through value-added activities and in turn, their contribution to rural prosperity.

To meet these identified needs of agriculture, the long-term (10 year) goals for this program are: increase the value of agricultural products sold per farm by small and medium-sized farms through the adoption of environmentally sustainable, economically viable best management practices; increase the share of the food dollar accruing to the small and medium-sized farms and to rural communities by creating on-farm value added activities based on enhanced knowledge of the interactions between changing consumer needs, environmental sustainability and economic profitability; and adopt ecological practices that will enhance the economic value of the land, operated by small and medium-sized farms, in agricultural use.

FY 2006 Priorities for Integrated Activities (those that combine research, education, and/or extension)

- 1) Determination and dissemination of information on the economical and ecological thresholds of alternative agricultural production systems to assist farm business decision making;
- 2) Identification of economic and environmental benefits and costs of small and medium-sized farms that produce food and fiber products, of alternative production-consumption systems and on- or near-farm processing; and
- 3) Understanding the impacts of land use change on the sustainability of small and medium-sized farms.

Other Key Information

- Integrated projects should include research, education, and extension/outreach objectives (at least two of three). These include: a) hypothesis-driven research to fill knowledge gaps that are critical to the development of practices and programs to address the problem area; b) create educational deliverables (e.g., interdisciplinary curricula and/or experiential learning for graduate and undergraduate students) that will train the next generation of scientists and educators who will work in the problem area; and/or c) deliver an effective extension/outreach program that will lead to measurable behavior change in an identified audience or stakeholder group. Projects should also include a management plan (developed with input from stakeholder advisory groups) that leads to measurable improvements in the problem area.
- Applications that focus on community development activities not directly related to agriculture should be directed to the Rural Development (62.0) Program. Applications not focused on the profitability and viability of small and medium-sized farms should not be directed to this program.
- If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget.

PART III—ELIGIBILITY INFORMATION

A. Eligible Applicants

For **research projects**, the eligibility requirements for the NRI are as follows: except where otherwise prohibited by law, State agricultural experiment stations, all colleges and universities, other research institutions and organizations, Federal agencies, national laboratories, private organizations or corporations, and individuals are eligible to apply for and to receive a competitive grant. The Agricultural Research Enhancement Awards (AREA) have some notable differences from these requirements. See Part II, C., 2. for details.

For **integrated projects**, the eligibility requirements for the NRI are as follows: except where otherwise prohibited by law, State agricultural experiment stations, all colleges and universities, research foundations maintained by colleges or universities, private research organizations with established and demonstrated capacities to perform research or technology transfer, Federal research agencies, and national laboratories are eligible to apply for and receive a competitive grant. The bridge grants have some notable differences from these requirements. See Part II, C., 3(b) for details.

Unsolicited applications will not be considered and applications from scientists at non-United States organizations will not be accepted. Award recipients may subcontract to organizations not eligible to apply provided such organizations are necessary for the conduct of the project.

B. Request for Determination

If an applicant considers itself a minority-serving institution and wishes to be considered for a bridge grant (as described in Part II, C., 3(b)), but is unable to meet the enrollment criteria specified in the Definitions section of this RFA, the applicant must submit to CSREES documentation supporting the request. This documentation must be submitted as part of the requestor's application package and must be received by CSREES by the applicable program deadline (see program description in Part II, E.). The Secretary or designated individual will determine whether the group or groups identified are eligible under this Program.

The Request for Determination must be submitted as a separate letter to the relevant National Program Leader (identified in Part II, E. of this RFA). The legend at the top of the letter must read: "REQUEST FOR DETERMINATION". In addition, the following information must be provided in the order specified below:

- (a) A description of each minority group that is being submitted for determination;
- (b) Data or studies supporting this group's designation as a minority group; and

(c) Data indicating that enrollment of the minority group(s) exceeds 50 percent of the total enrollment at the academic institution, including graduate and undergraduate and full- and part-time students.

C. Cost Sharing or Matching

For research projects, unless otherwise indicated, cost sharing or matching is not required for NRI awards. See Part II, C. for matching requirements for equipment grants.

For integrated projects, if a grant is for applied research that is commodity-specific and not of national scope, the grant recipient is required to match the USDA funds awarded on a dollar-for-dollar basis from non-Federal sources with cash and/or in-kind contributions.

PART IV—APPLICATION AND SUBMISSION INFORMATION

A. Address to Request Application Package

Program application materials are available at the CSREES Funding Opportunities Web site (http://www.csrees.usda.gov/funding/forms_standard.html). The CSREES application forms are also accessible through the NRI home page (<http://www.csrees.usda.gov/funding/nri/nri.html>). If you do not have access to the Web page or have trouble downloading material and you would like a hard copy, you may contact the Proposal Services Unit, Competitive Programs, USDA/CSREES at (202) 401-5048. When calling the Proposal Services Unit, please indicate that you are requesting the RFA and associated application forms for the National Research Initiative Competitive Grants Program. These materials also may be requested via Internet by sending a message with your name, mailing address (not e-mail) and phone number to psb@csrees.usda.gov. State that you want a copy of the RFA and the associated application forms for the National Research Initiative Competitive Grants Program.

B. Content and Form of Application Submission

Applications should be prepared following the guidelines and the instructions below. Each application must contain the following elements in the order indicated:

1. Integrated and Standard Research Grant Applications

(a) General

Use the following guidelines to prepare an application. Proper preparation of applications will assist reviewers in evaluating the merits of each application in a systematic, consistent fashion:

(a) Prepare the original application on only one side of the page using standard size (8 1/2" x 11") white paper, one-inch margins, typed or word processed using no type smaller than 12 point font, and single- or double-spaced. Use an easily readable font face (e.g.,

Arial, Tahoma, Times Roman). The original application with signatures must be single-sided. Applicants have the option to submit copies of the original as either single-sided or double-sided documents.

(b) Number each page of the application sequentially, starting with the Project Description, including the budget pages, required forms, and any appendices.

(c) Staple the application in the upper left-hand corner. Do not bind. An original and 14 copies of the application are required (except for applications for Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, and Seed Grants for which an original and 10 copies of the application should be submitted) along with 2 additional copies of the Project Summary, Form CSREES-2003, as a separate attachment. Prior to mailing, compare the application with the checklist found at the end of this document to ensure the application is complete.

(d) Include original illustrations (photographs, color prints, etc.) in all copies of the application to prevent loss of meaning through poor quality reproduction.

(e) The contents of the application should be assembled in the following order:

- (1) Proposal Cover Page (Form CSREES-2002)
- (2) Table of Contents
- (3) Project Summary (Form CSREES-2003)
- (4) Response to Previous Review (if applicable)
- (5) Project Description (see instructions for page limitations)
- (6) References to Project Description
- (7) Facilities and Equipment
- (8) Key Personnel (vitae and publications list)
- (9) Collaborative Arrangements (including letters of support)
- (10) Conflict of Interest List (Form CSREES-2007)
- (11) Results from Prior NRI Support (if applicable)
- (12) Budget (Form CSREES-2004)
- (13) Budget Narrative
- (14) Matching (if required)
- (15) Current and Pending Support (Form CSREES-2005)
- (16) Assurance Statement(s) (Form CSREES-2008)
- (17) Compliance with the National Environmental Policy Act (NEPA) (Form CSREES-2006)
- (18) Appendices to Project Description
- (19) Personal Data on Project Director(s) (Page B of Form CSREES-2002). NOTE:
Place this form after the last page of the signed original application. Do not attach to the copies of the application.

(2) Proposal Cover Page (Form CSREES-2002)

Page A

Each copy of each grant application must contain a Proposal Cover Page, Form CSREES-2002. One copy of the application, preferably the original, must contain the pen-and-ink signature(s) of the proposing PDs and the AOR, the individual who possesses the necessary authority to commit the organization's time and other relevant resources to the project. If there are more than three co-PDs for an application, please list additional co-PDs on a separate sheet of paper (with appropriate information and signatures) and attach to the Proposal Cover Page (Form CSREES-2002). Any proposed PD or co-PD whose signature does not appear on Form CSREES-2002 or attached additional sheets will not be listed on any resulting grant award. Complete both signature blocks located at the bottom of the Proposal Cover Page form. Please note that Form CSREES-2002 is comprised of two parts - Page A, which is the Proposal Cover Page, and Page B, which is the Personal Data on Project Director.

Form CSREES-2002 serves as a source document for the CSREES grant database; it is therefore important that it be accurately completed in its entirety, especially the e-mail addresses requested in Blocks 4.c. and 18.c. However, the following items are highlighted as having a high potential for errors or misinterpretations:

(a) Type of Performing Organization (Blocks 6.a. and 6.b.). For Block 6.a., a check should be placed in the appropriate box to identify the type of organization which is the legal recipient named in Block 1. Only one box should be checked. For Block 6.b., please check as many boxes as apply to the affiliation of the PD listed in Block 16.

(b) Title of Proposed Project (Block 7.). The title of the project must be brief (140-character maximum, including spaces), yet represent the major thrust of the effort being proposed. Project titles are read by a variety of nonscientific people; therefore, highly technical words or phraseology should be avoided where possible. In addition, introductory phrases such as “investigation of,” “research on,” “education for,” or “outreach that” should not be used.

(c) Program to Which You Are Applying (Block 8.). Enter “NRI”. The program area (i.e., name of the program component) and number (e.g., 62.0 Rural Development) should also be inserted in Block 8. **Also, in block 8, please identify, if available, the Department of Health and Human Services’ Payment Management System (DHHS-PMS) Payee Identification Number (PIN) that has been assigned to your organization for CSREES awards. This is a four character alpha numeric code used by DHHS-PMS to associate the Entity Identification Number (EIN) with the recipient’s business office where the financial responsibility and accountability for the organization rests. If a PIN has not been assigned to your organization, you will be assigned a DHHS-PMS PIN if and when an award is made to your organization.**

(d) DUNS NO. (Data Universal Numbering System) (Block 11.). A DUNS number must be included for the legal recipient named in Block 1. (except applications from individuals). See Part VIII, J.

(e) Type of Request (Block 14.). Check the appropriate box for your application. For “Renewals” and “Resubmitted Renewals,” the prior USDA Award Number must be identified.

(f) Project Director (PD) (Blocks 16.-19.). Blocks 16.-18. are used to identify the PD and Block 19. to identify co-PDs. If needed, additional co-PDs may be listed on a separate sheet of paper and attached to Form CSREES-2002, the Proposal Cover Page, with the applicable co-PD information and signatures. Listing multiple co-PDs, beyond those required for genuine collaboration, is discouraged.

(g) Other Possible Sponsors (Block 21.). List the names or acronyms of all other public or private sponsors including other agencies within USDA to which your application has been or might be sent. In the event you decide to send your application to another organization or agency at a later date, you must inform the identified CSREES program contact as soon as practicable. Submitting your application to other potential sponsors will not prejudice its review by CSREES; however, submitting the same (i.e., duplicate) application to another CSREES program is not allowed.

Page B

Page B should be submitted only with the original signature copy of the application and should be placed as the last page of the original copy of the application. This page contains personal data on the PD(s). CSREES requests this information in order to monitor the operation of its review and awards processes. This page will not be duplicated or used during the review process. Please note that failure to submit this information will in no way affect consideration of your application.

(3) Table of Contents

For consistency and ease in locating information, each application must contain a detailed Table of Contents immediately following the Proposal Cover Page. The Table of Contents should contain page numbers for each component of the application. Page numbering should begin with the first page of the Project Description. A Table of Contents page is included at the end of this RFA for your convenience. It should be used in the preparation of an application.

(4) Project Summary (Form CSREES-2003)

The application must contain a Project Summary, Form CSREES-2003. The summary should be approximately 250 words, contained within the box, placed immediately after the Table of Contents, and not numbered. The names and affiliated organizations of the PD and all co-PDs should be listed on this form, in addition to the title of the project. The summary should be a self-contained, specific description of the activity to be undertaken

and should focus on: overall project goal(s) and supporting objectives; plans to accomplish project goal(s); and relevance of the project to the goals of the NRI. The PD(s) should also indicate in the Project Summary which of the five CSREES goals (Part II, D.) the proposed project addresses. The importance of a concise, informative Project Summary cannot be overemphasized. If there are more than three co-PDs for an application, please list additional co-PDs on a separate sheet of paper (with appropriate information) and attach to the Project Summary (Form CSREES-2003). (Please check the appropriate “Proposal Type” you are submitting in the box on the upper right-hand portion of the form. For integrated projects, please check the “Standard Research Proposal” box.). If submitting an integrated project, please state this in the first sentence of the Project Summary (Form CSREES-2003).

(5) Response to Previous Review

This requirement only applies to “Resubmitted Applications” and “Resubmitted Renewal Applications” as described in Part II. B., Types of Applications. PDs must respond to the previous review panel summary on no more than one page, titled “RESPONSE TO PREVIOUS REVIEW,” which is to be placed directly after the Project Summary, Form CSREES-2003. If desired, additional comments may be included in the text of the Project Description, subject to the page limitations of that section.

(6) Project Description

PLEASE NOTE: For Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, and Seed Grants, the Project Description section may not exceed a total of 7 single- or double-spaced pages, including figures and tables. For all other types of applications, the Project Description section may not exceed a total of 18 single- or double-spaced pages, including figures and tables. These page limitations apply regardless of whether figures or tables are included. All pages, including those with figures and tables, should be numbered sequentially. Applications exceeding the applicable page limitation may be returned without review. These maximums have been established to ensure fair and equitable competition. Project Descriptions must include all of the following:

(1) Introduction. A clear statement of the long-term goal(s) and supporting objectives or research questions of the proposed project should be included. Summarize the body of knowledge or other past activities that substantiate the need for the proposed project. Describe ongoing or recently completed significant activities related to the proposed project including the work of key project personnel. Preliminary data/information pertinent to the proposed research should be included in this section. All works cited should be referenced (see g., References to Project Description, below).

(2) Progress Report. If the application is a renewal of an existing project supported under this program (or its predecessor), include a clearly marked progress report describing results to date from the previous award. In addition, the progress report must be contained within the 18-page limit and should contain the following information:

- A comparison of actual accomplishments with the objectives established for the previous award;
- The reasons established objectives were not met, if applicable; and
- A listing of any publications resulting from the award. Copies of no more than 2 preprints or reprints may be appended to the application (see section on Appendices to Project Description).

(3) *Rationale and Significance.* Concisely present the rationale behind the proposed research, extension or education. The specific relationship of the project's objectives to one or more of the particular program priorities and the potential long-range improvement in and sustainability of U.S. agriculture and food systems should be shown clearly. These purposes are described under Part I, B., Purpose and Priorities. Any novel ideas or contributions that the proposed project offers should also be discussed in this section.

(4) *Approach.* The activities proposed or problems being addressed must be clearly stated and the approaches being applied clearly described. Specifically, this section must include:

- A description of the activities proposed and the sequence in which the activities are to be performed;
- Methods to be used in carrying out the proposed project, including the feasibility of the methods;
- Expected outcomes;
- Means by which results will be analyzed, assessed, or interpreted;
- How results or products will be used;
- Pitfalls that may be encountered;
- Limitations to proposed procedures; and
- A full explanation of any materials, procedures, situations, or activities related to the project that may be hazardous to personnel, along with an outline or precautions to be exercised to avoid or mitigate the effects of such hazards.

(7) References to Project Description

All references to works cited should be complete, including titles and all co-authors, and should conform to an acceptable journal format. References are not considered in the page-limitation for the Project Description.

(8) Facilities and Equipment

Facilities and major items of equipment that are available for use or assignment to the proposed project during the requested period of support should be described. In addition, items of nonexpendable equipment necessary to conduct and successfully conclude the proposed project should be listed (including dollar amounts), and, if funds are requested for their acquisition, justified on a separate page and attached to the budget.

(9) Key Personnel

The following should be included, as applicable:

- (a) The roles and responsibilities of the PD, co-PD, and/or collaborator should be clearly described; and
- (b) The vitae of the PD and each co-PD, senior associate, and other professional personnel. This section should include vitae of all key persons who are expected to work on the project, whether or not CSREES funds are sought for their support. The vitae should be limited to two (2) pages each in length, excluding publications listings. The vitae should include a presentation of academic and research credentials, as applicable, e.g., earned degrees, teaching experience, employment history, professional activities, honors and awards, and grants received. A chronological list of **all** publications in **refereed journals** during the past **4 years**, including those in press, must be provided for each project member for whom a curriculum vita is provided. Also list only those **non-refereed** technical publications that have **relevance** to the proposed project. All authors should be listed in the same order as they appear on each paper cited, along with the title and complete reference as these usually appear in journals.

(10) Collaborative Arrangements

If it will be necessary to enter into formal consulting or collaborative arrangements with others, such arrangements should be fully explained and justified. If the consultant(s) or collaborator(s) are known at the time of application, a vitae or resume should be provided. In addition, evidence (e.g., letter of support) should be provided that the collaborators involved have agreed to render these services. The applicant also will be required to provide additional information on consultants and collaborators in the budget portion of the application. See instructions in the application forms for completing Form CSREES-2004, Budget.

(11) Conflict of Interest List (Form CSREES-2007)

A Conflict of Interest List, Form CSREES-2007, must be provided for all individuals who have submitted a vita in response to item 9.(b) of this section. Each Form CSREES-2007 should **list alphabetically, by the last names**, the full names of the individuals in the following categories: (a) all co-authors on publications within the past 4 years, including pending publications and submissions; (b) all collaborators on projects within the past four years, including current and planned collaborations; (c) all thesis or postdoctoral advisees/advisors; and (d) all persons in your field with whom you have had a consulting or financial arrangement within the past four years, who stand to gain by seeing the project funded. This form is necessary to assist program staff in excluding from application review those individuals who have conflicts of interest with the personnel in the grant application. The program contact must be informed of any additional conflicts of interest that arise after the application is submitted.

(12) Results from Prior NRI Support

If the PD or a co-PD has received NRI support in the past 5 years, information on results from that prior funding is required. This information will be used in the review of the application and is limited in length to one page per award. For renewal applications, provision of the Progress Report (see Project Description) is sufficient and information need not be repeated in this section. For each award, list the CSREES award number, the amount and period of support, the title of the project, a summary of the results of the completed work, the long-term effects of these results, and the publications resulting from the NRI award.

(13) Budget

(a) Budget Form (Form CSREES-2004)

Prepare the Budget, Form CSREES-2004, in accordance with instructions provided with the application forms. A budget form is required for each year of requested support. In addition, a cumulative budget is required detailing the requested total support for the overall project period. The budget form may be reproduced as needed by applicants. Funds may be requested under any of the categories listed on the form, provided that the item or service for which support is requested is allowable under the authorizing legislation, the applicable statutes, regulations, and Federal cost principles, and these program guidelines, and can be justified as necessary for the successful conduct of the proposed project (see Part IV, D. for applicable funding restrictions and indirect costs limitations). Applicants also must include a budget narrative to justify their budget requests (see section (b) below).

(b) Budget Narrative

All budget categories, with the exception of Indirect Costs, for which support is requested, must be individually listed (with costs) in the same order as the budget and justified on a separate sheet of paper and placed immediately behind the Budget form. If consulting, collaborative, or subcontractual arrangements are included in the application, these arrangements should be fully explained and justified. The rate of pay for any consultant must be included, if known at the time of application. Letters of intent or other evidence should be provided to show that collaborators have agreed to participate. A proposed statement of work, vitae, and a budget for each arrangement involving the transfer of substantive programmatic work or the provision of financial assistance to a third party must be supplied. In multi-institutional applications, a budget and budget narrative must be included for each institution involved. The lead institution and each participating institution must be identified.

(c) Matching

For those equipment grants that require matching, a letter signed by the institution's authorized organizational representative stating that the necessary non-Federal matching

funds will be made available from an institution or other source is required. If the institution is eligible for the waiver of these matching funds, the budget justification must include a letter signed by the institution's authorized organizational representative so stating (See Table 2 for eligibility).

For integrated projects, if an applicant concludes that matching funds are not required (as specified under Part III, C.), a justification should be included in the Budget Narrative. CSREES will consider this justification when ascertaining final matching requirements. CSREES retains the right to make final determinations regarding matching requirements.

For those integrated projects where matching funds are required (as specified under Part III, C.), applications should include written verification of commitments of matching support (including both cash and in-kind contributions) from third parties (non-federal sources). Written verification means:

For any third party cash contributions, a separate pledge agreement for each donation, signed by the authorized organizational representative of the donor organization and the applicant organization, which must include: (1) the name, address, and telephone number of the donor; (2) the name of the applicant organization; (3) the title of the project for which the donation is made; (4) the dollar amount of the cash donation; and (5) a statement that the donor will pay the cash contribution during the grant period.

The sources and the amount of all matching support from outside the applicant organization should be summarized on a separate page and placed in the application immediately following the Budget Narrative. All pledge agreements must be placed in the application immediately following the summary of matching support.

The value of applicant contributions to the project shall be established in accordance with the applicable cost principles. Applicants should refer to OMB Circulars A-21, Cost Principles for Educational Institutions, A-87, Cost Principles for State, Local, and Tribal Governments, A-122, Cost Principles for Non-Profit Organizations, and the cost principles in the Federal Acquisition Regulation at 48 CFR 31.2 for further guidance and other requirements relating to matching and allowable costs.

(14) Current and Pending Support (Form CSREES-2005)

All applications must contain Form CSREES-2005 listing other current public or private support (including in-house support) to which personnel identified in the application have committed portions of their time, whether or not salary support for person(s) involved is included in the budget. Current and pending support information (on Form CSREES-2005) is now required only for the Project Directors as listed on the Proposal Cover Page (Form CSREES-2002). In addition to completing Form CSREES-2005, Project Directors also should include a brief statement of objectives or project summaries for all projects listed in Current and Pending Support that could be deemed through the review process as potentially overlapping with the submitted application based on project title, including formula funding and other forms of intramural support.

Please follow the instructions provided on this form. Concurrent submission of identical or similar applications to the possible sponsors will not prejudice application review or evaluation by the CSREES. However, an application that duplicates or overlaps substantially with an application already reviewed and funded (or to be funded) by another organization or agency will not be funded under this program. Please note that the project being proposed should be included in the pending section of the form. Total project time listed for each PD should not exceed 100% for concurrent projects. An application that duplicates or overlaps substantially with an application already reviewed and funded (or to be funded) by another organization or agency will not be funded under this program.

(15) Assurance Statement(s) (Form CSREES-2008)

A number of situations encountered in the conduct of projects require special assurances, supporting documentation, etc., before funding can be approved for the project. In addition to any other situation that may exist with regard to a particular project, applications involving any of the following elements must comply with the additional requirements as applicable.

(a) Recombinant DNA or RNA Research

All key personnel identified in the application and all endorsing officials of the proposing organization are required to comply with the guidelines established by the National Institutes of Health entitled, "Guidelines for Research Involving Recombinant DNA Molecules," as revised. If your project proposes to use recombinant DNA or RNA techniques, you must so indicate by checking the "yes" box in Block 20 of Form CSREES-2002 (the Proposal Cover Page) and by completing Section A of Form CSREES-2008. For applicable applications recommended for funding, Institutional Biosafety Committee approval is required before CSREES funds will be released. Please refer to the application forms for further instructions.

(b) Animal Care

Responsibility for the humane care and treatment of live vertebrate animals used in any grant project supported with funds provided by CSREES rests with the performing organization. Where a project involves the use of living vertebrate animals for experimental purposes, all key personnel identified in an application and all endorsing officials of the proposing organization are required to comply with the applicable provisions of the Animal Welfare Act, as amended (7 U.S.C. 2131 et seq.), and the regulations promulgated thereunder by the Secretary in 9 CFR Parts 1, 2, 3, and 4 pertaining to the care, handling, and treatment of these animals. If your project will involve these animals, you should check "yes" in Block 20 of Form CSREES-2002 and complete Section B of Form CSREES-2008. In the event a project involving the use of live vertebrate animals results in a grant award, funds will be released only after the Institutional Animal Care and Use Committee has approved the project. Please refer to the application forms for further instructions.

(c) Protection of Human Subjects

Responsibility for safeguarding the rights and welfare of human subjects used in any grant project supported with funds provided by CSREES rests with the performing organization. Guidance on this issue is contained in the National Research Act, Pub. L. No. 93-348, as amended, and implementing regulations promulgated by the Department under 7 CFR Part 1c. If you propose to use human subjects in your project, you should check the “yes” box in Block 20 of Form CSREES-2002 and complete Section C of Form CSREES-2008. In the event a project involving human subjects at risk is recommended for award, funds will be released only after the Institutional Review Board (IRB) has approved the research plan and CSREES has accepted documentation of the IRB approval. Please refer to the application forms for additional instructions.

(16) Certifications

Note that by signing Form CSREES-2002, the Proposal Cover Page, the applicant is providing the certifications required by 7 CFR Part 3017, regarding Debarment and Suspension and Drug-Free Workplace, and 7 CFR Part 3018, regarding Lobbying. The certification forms are included in the application package for informational purposes only. These forms should not be submitted with the application since by signing Form CSREES-2002 your organization is providing the required certifications. If the project will involve a subcontractor or consultant, the subcontractor/consultant should submit a Form AD-1048, Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions, to the grantee organization for retention in their records. This form should not be submitted to USDA.

(17) Compliance with the National Environmental Policy Act (NEPA) (Form CSREES-2006)

As outlined in 7 CFR Part 3407 (the CSREES regulations implementing NEPA), the environmental data for any proposed project is to be provided to CSREES so that CSREES may determine whether any further action is needed. In some cases, however, the preparation of environmental data may not be required. Certain categories of actions are excluded from the requirements of NEPA.

In order for CSREES to determine whether any further action is needed with respect to NEPA, pertinent information regarding the possible environmental impacts of a particular project is necessary; therefore, Form CSREES-2006, NEPA Exclusions Form, must be included in the application indicating whether the applicant is of the opinion that the project falls within a categorical exclusion and the reasons therefore. If it is the applicant’s opinion that the proposed project falls within the categorical exclusions, the specific exclusion(s) must be identified.

Even though a project may fall within the categorical exclusions, CSREES may determine that an Environmental Assessment or an Environmental Impact Statement is necessary for an activity if substantial controversy on environmental grounds exists or if

other extraordinary conditions or circumstances are present which may cause such activity to have a significant environmental effect.

(18) Appendices to Project Description

Each Project Description is expected to be complete; however, additions to the Project Description (appendices) are allowed if they are directly germane to the proposed research and are strictly limited to a maximum of 2 of the following:

- (1) Reprints (papers that have been published in peer-reviewed journals); and
- (2) Preprints (only manuscripts in press for a peer-reviewed journal will be accepted and must be accompanied by letters of acceptance from the publishing journals).

Preprints sent in support of the application should be single-spaced and printed on both sides of the page. Each preprint must be identified with the name of the submitting organization, the name(s) of the PD(s), and the title of the application, and be securely attached to each copy of the application.

Staff of the NRI will not collate applications or application addenda. Information may not be appended to an application to circumvent page limitations prescribed for the Project Description. Extraneous materials will not be used during the peer review process.

2. Research Conference Applications

Submit applications requesting support for conferences to appropriate programs, described in Part II, E., by applicable deadlines. **Potential applicants are strongly advised to consult appropriate NRI staff before preparing their conference application.** The application should include:

(a) Proposal Cover Page (Form CSREES-2002);

Appropriately complete and sign.

(b) Project Summary (Form CSREES-2003);

State the objectives of the conference, symposium, or workshop, as well as the proposed location and probable inclusive date(s) of the conference. Check the box marked "Conference" in the upper right-hand corner of the Project Summary (Form CSREES-2003).

(c) Project Description;

Describe the conference proposed, including:

- (1) A justification for the meeting;

- (2) Recent meetings on the same subject with dates and locations;
- (3) Names and organizational affiliations of the chair and other members of the organizing committee;
- (4) A proposed program (or agenda) for the conference, including a listing of scheduled participants and their institutional affiliations; and
- (5) The method of announcement or invitation that will be used.

(d) Curriculum Vita;

Include for submitting PD(s) with a brief listing of relevant publications. Each vita and publications listing, combined, should not exceed two (2) pages.

(e) Conflict of Interest List (Form CSREES-2007);

Include for submitting PD(s).

(f) An Estimated Total Budget (Form CSREES-2004);

Estimate for conference, and include an itemized breakdown of all support requested from the NRI. The budget for the conference may include an appropriate amount for transportation and subsistence costs for participants and for other conference-related costs. Conference awards are not expected to exceed \$10,000 and are not renewable.

(g) Current and Pending Support (Form CSREES-2005); and

(h) Appropriate Assurance Statement(s) (Form CSREES-2008), Certifications, and National Environmental Policy Act Exclusions Form (Form CSREES-2006).

See instructions in Part IV, B., 1., 17.

3. Agricultural Research Enhancement Award (AREA) Applications

(a) Postdoctoral Fellowships

See Part II, C., 2(a) and Part III, A. for eligibility requirements.

Submit applications requesting support for postdoctoral fellowships to appropriate research programs, described in Part II, E., by applicable deadlines. Individual may submit applications directly or through the mentor's institution. Postdoctoral applicants must be sole PDs listed on the application. Applications should contain all of the components of, and be assembled in the order described in, Part IV, B., 1.

Additional instructions include:

- (1) Proposal Cover Page (Form CSREES-2002). If the application is submitted through an institution, Form CSREES-2002 must be endorsed by the AOR who possesses the necessary authority to commit the applicant's time and other relevant resources. If an individual submits the application, only the proposing postdoctoral applicant should sign Form CSREES-2002;
- (2) Project Summary (Form CSREES-2003). Check the box marked "Postdoctoral" in the upper right-hand corner of the form;
- (3) Documentation that arrangements have been made with an established investigator to serve as mentor. *The letter must provide assurance that the proposed project initiates the postdoctoral student's independent research program. Although the project may fit in the context of the mentor's existing research area, it should not simply be an extension of ongoing projects in the mentor's laboratory;*
- (4) Documentation that arrangements have been made for the necessary facilities, space, and materials for conduct of the research;
- (5) Documentation from the host institution's AOR indicating that the host institution concurs with the above arrangements. Postdoctoral applicants from Federal laboratories must notify the appropriate regional office;
- (6) Conflict of Interest List (Form CSREES-2007) for the postdoctoral applicant and the scientific mentor;
- (7) Budget (Form CSREES-2004). The budget is limited to \$125,000 and to 2 year's duration. Funds should be requested primarily for salary support although other expenditures (e.g., supplies, travel, and publication costs) are allowable costs if properly justified. Either an institutional allowance, not to exceed \$2,400 per year, or indirect costs may be requested within the \$125,000 limitation. The institutional allowance should be included on Line J. of the Budget form, "All Other Direct Costs";
- (8) Current and Pending Support (Form CSREES-2005) for both the postdoctoral applicant and the scientific mentor (as documentation of on-going work in the mentor's laboratory);
- (9) Assurance Statements (Form CSREES-2008). Postdoctoral fellowship applicants whose research requires Assurance Statements must have their project reviewed by the appropriate committee(s) at the institution where the research will be conducted. Assurance Statements must be signed by an AOR of that institution. (See Part IV, B., 1., 15.);

(10) Certifications regarding Debarment and Suspension, Drug-Free Work Place, and Lobbying (by signing the Proposal Cover Page the institution(s) agree to these provisions); and

(11) National Environmental Policy Act Exclusions Form (Form CSREES-2006).

(b) New Investigator Awards

See Part II, C., 2(b) and Part III, A. for eligibility requirements.

New investigators should submit research applications to appropriate research programs, described in Part II, E., by applicable deadlines. Applications should contain all of the components of, and be assembled in the order described in, Part IV, B., 1. Check the box marked “New Investigator” in the upper right-hand corner of the Project Summary (Form CSREES-2003).

(c) Strengthening Awards

(1) Research Career Enhancement Awards (Sabbatical Awards). See Research Career Enhancement Awards (Sabbatical Awards) in Part II, C., 2(c) and Part III, A. for eligibility requirements. Applications from eligible faculty wishing to enhance their research capabilities through sabbatical leaves are encouraged. Applications should be submitted to appropriate research programs, described in Part II, E., by applicable deadlines. Applications should originate through the applicant's home institution. The following guidelines apply:

(a) Proposal Cover Page (CSREES-2002). Complete as described in Part IV, B., 1. Indicate NRI and the program code of the appropriate research program in Block 8.;

(b) Project Summary (Form CSREES-2003). Indicate overall project goals and supporting objectives. Check the box marked “Career Enhancement” in the upper right-hand corner;

(c) Project Description. Describe the proposed sabbatical (limited to seven (7) pages including figures and tables). Include:

- A general description of the research interests and goals of the applicant in order to provide perspective for the application;
- A description of the research project to be pursued while on the sabbatical leave;
- A statement of how the proposed activities will enhance the scientific research capabilities of the applicant; and
- A statement of future research goals and objectives once the sabbatical is complete and how the sabbatical will enable the applicant to pursue these goals.

- (d) Curriculum Vita, Publication Lists (including titles), and Conflict of Interest Lists (Form CSREES-2007). Include for applicant, scientific host and any other personnel whose qualifications merit consideration in the evaluation of the application. Follow detailed instructions provided under Part IV, B., 1.;
 - (e) A letter from the home institution detailing the particular arrangements at the home institution with respect to salary and date and duration of sabbatical;
 - (f) A letter from the scientific host indicating willingness to serve in this capacity, and a description of the host's contribution to the proposed activities both scientifically and with regard to use of facilities and equipment;
 - (g) A statement signed by the Department Head or equivalent official at the host institution indicating a commitment to provide research space and facilities for the period of the applicant's presence;
 - (h) Budget (Form CSREES-2004) and Budget Justification. Limit to one year's salary and funds for travel and supplies;
 - (i) Current and Pending Support (Form CSREES-2005);
 - (j) Assurance Statements (Form CSREES-2008). Applicants whose research requires Assurance Statements must have their project reviewed and approved by the appropriate committee(s) at the institution where the research will be conducted. Assurance Statements must be signed by an AOR of that institution. (See Part IV, B., 1, 15.);
 - (k) Certifications regarding Debarment and Suspension, Drug-Free Workplace, and Lobbying (by signing the Proposal Cover Page the institution(s) agree to these provisions); and
 - (l) National Environmental Policy Act Exclusions Form (Form CSREES-2006).
- (2) Equipment Grants. See Equipment Grants, in Part II, C., 2(c) and Part III, A. for eligibility requirements. Applications requesting assistance in purchasing equipment must be submitted as Equipment Grant applications. Applications should be submitted to appropriate research programs, described in Part II, E., by applicable deadlines. Include the following:
- (a) Proposal Cover Page (CSREES-2002). Complete as described in Part IV, B., 1. Indicate NRI and the program code of the appropriate research program in Block 8.;
 - (b) Project Summary (Form CSREES-2003). Indicate equipment sought and overall project goals for its use. Check the box marked "Equipment" in the upper right-hand corner;

- (c) Project Description (limited to 7 pages). Include general description of the research project(s) for which the equipment will be used, how the equipment will fit into or enhance the research program, and how the equipment will allow the applicant to become competitive for future funding or move into new research areas;
 - (d) A brief description of other similar or complementary equipment available to the PD at the institution and why the requested equipment is necessary;
 - (e) Curriculum Vita, Publication Lists (including titles), and Conflict of Interest Lists (Form CSREES-2007). Include for applicant and other major users of the equipment. Follow detailed instructions provided under Part IV, B., 1.;
 - (f) Budget Form (CSREES-2004) and Budget Justification. See Part II, C., 2(c) for budget limitations, matching requirements, waiver conditions and cost restrictions. The budget justification should describe the instrument requested including the manufacturer and model number, if known; provide a detailed budget breakdown of the equipment and accessories required; and indicate the amount of funding requested from USDA for each item of equipment. A letter signed by the institution's AOR stating that the necessary non-Federal matching funds will be made available from an institutional or other source is required. If the institution is eligible for the waiver of these matching funds, the budget justification must include a letter signed by the institution's AOR so stating and providing documentation of eligibility (See Table 2 for eligibility). A justification must be given for how this equipment will strengthen the applicant's research program or institution;
 - (g) Current and Pending Support (Form CSREES-2005). Follow instructions in Part IV, B, 1. If the applicant has significant funding from other sources, a justification must be given for how this equipment will strengthen the applicant's research program or institution;
 - (h) Certifications regarding Debarment and Suspension, Drug-free Work Place, and Lobbying (by signing the Proposal Cover Page the institution(s) agree to these provisions); and
 - (i) National Environmental Policy Act Exclusions Form (Form CSREES-2006).
- (3) Seed Grants. See Seed Grants, in Part II, C., 2(c) and Part III, A. for eligibility requirements. Applications from eligible faculty wishing to collect preliminary data should be submitted as Seed Grant applications. Applications should be submitted to appropriate research programs, described in Part II, E., Program Opportunities, by applicable deadlines. Applications should contain all of the components of, and be assembled in the order described in, Part IV, B., 1. In addition, the following are required:

(a) Project Summary (Form CSREES-2003). Check the box marked “Seed Grant” in the upper right-hand corner; and

(b) Project Description (limited to 7 pages). Include all the components of a Standard Research Project application and present enough experimental detail to allow adequate evaluation. In order to be competitive, long-term research goals and a statement describing how this seed grant will allow the applicant to become competitive for future funding should be included.

(4) Strengthening Standard Research Project Awards. See Strengthening Standard Research Project Awards, in Part II, C, 2(c) for eligibility requirements. Faculty who are eligible for the Strengthening Award Program may wish to apply for a Standard Research Project Award. Applications should be directed to appropriate research programs, described in Part II, E., by applicable deadlines. Strengthening Standard Research Project Award Applications should contain all of the components and meet the format guidelines (including page limitations) described in Part IV, B., 1.; however, applicants should check the box marked “Standard Strengthening” in the upper right-hand corner of the Project Summary (Form CSREES-2003).

C. Submission Dates and Times

Applications must be received by COB in the Proposal Services Unit/CSREES on the dates indicated in the table at the end of this RFA (5:00 p.m., Eastern Time) for the various program areas. Applications received after applicable deadlines will not be considered for funding.

D. Funding Restrictions

The FY 2005 Consolidated Appropriations Act (Public Law 108-447) limited indirect costs to 20 percent of the total Federal funds provided under each award. CSREES anticipates that the FY 2006 Appropriations Act will include a similar limitation. Therefore, when preparing budgets, applicants should limit their requests for recovery of indirect costs to the lesser of their institution’s official negotiated indirect cost rate or the equivalent of 20 percent of total Federal funds awarded. Another method of calculating the maximum allowable is 25 percent of the total direct costs. Please note that if the 2006 Appropriations Act contains a different indirect cost limitation CSREES will contact each successful applicant to apply the correct rate prior to the award of a grant.

Funds may not be used for the renovation or refurbishment of research spaces (including energy retrofitting); purchase or installations of fixed equipment in such spaces; or planning, repair, rehabilitation, acquisition, or construction of buildings or facilities.

E. Other Submission Requirements

1. What to Submit

An original and 14 copies of the application are required (except for applications for Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, and Seed Grants, for which an original and 10 copies of the application should be submitted) and 2 additional copies of the Project Summary, Form CSREES-2003, as a separate attachment. All copies of the application and the Project Summary must be submitted in one package. The original application with signatures must be single-sided. Applicants have the option to submit copies of the original as either single-sided or double-sided documents. (Double-sided copies are strongly encouraged).

2. Multiple Submissions

Duplicate, essentially duplicate, or predominantly overlapping applications submitted to one or more program areas within the NRI (including the programs described under Agricultural Research Enhancement Awards) in any one fiscal year **will be returned without review**. In addition, applicants also may not submit to the NRI an application that is considered duplicate, essentially duplicate, or predominantly overlapping with an application submitted to another CSREES program in the same fiscal year.

3. Where to Submit

Applicants are strongly encouraged to submit completed applications via overnight mail or delivery service to ensure timely receipt by the USDA. The address for hand-delivered applications or applications submitted using an express mail or overnight courier service is:

National Research Initiative Competitive Grants Program
c/o Proposal Services Unit
Cooperative State Research, Education, and Extension Service
U.S. Department of Agriculture
Room 1420, Waterfront Centre
800 9th Street, SW
Washington, DC 20024
Telephone: (202) 401-5048

Applications sent via the U.S. Postal Service must be sent to the following address:

National Research Initiative Competitive Grants Program
c/o Proposal Services Unit
Cooperative State Research, Education, and Extension Service
U.S. Department of Agriculture
STOP 2245
1400 Independence Avenue, SW
Washington, DC 20250-2245

The receipt of all applications will be acknowledged by e-mail. Therefore, applicants are strongly encouraged to provide accurate e-mail addresses, where designated, on the Form CSREES-2002. If the applicant's e-mail address is not indicated, CSREES will acknowledge receipt of the application by letter.

If an applicant has not received an acknowledgment within 60 days of the submission, the applicant must contact the Agency contact (see Part VII) immediately and ask for the application number assigned to the application. Failure to do so may result in the application not being considered for funding by the peer review panel. Once the application has been assigned an application number, this number should be cited on all future correspondence.

PART V—APPLICATION REVIEW REQUIREMENTS

A. General

Each application will be evaluated in a two-part process. First, each application will be screened to ensure that it meets the administrative requirements as set forth in this RFA. Applications that do not fall within the guidelines as stated in the RFA will be eliminated from program competition and will be returned to the applicant. Second, a review panel will technically evaluate applications that meet these requirements. Written comments will be solicited from *ad hoc* reviewers when required, and individual written comments and a peer review panel prior to recommending applications for funding will provide in-depth discussions.

Reviewers will be selected based upon their training and experience in relevant scientific, extension, or education fields, taking into account the following factors: (a) the level of relevant formal scientific, technical education, or extension experience of the individual, as well as the extent to which an individual is engaged in relevant research, education, or extension activities; (b) the need to include as reviewers experts from various areas of specialization within relevant scientific, education, or extension fields; (c) the need to include as reviewers other experts (e.g., producers, range or forest managers/operators, and consumers) who can assess relevance of the applications to targeted audiences and to program needs; (d) the need to include as reviewers experts from a variety of organizational types (e.g., colleges, universities, industry, state and Federal agencies, private profit and non-profit organizations) and geographic locations; (e) the need to maintain a balanced composition of reviewers with regard to minority and female representation and an equitable age distribution; and (f) the need to include reviewers who can judge the effective usefulness to producers and the general public of each application.

B. Evaluation Criteria

Agricultural research supported under this program shall be designed, among other things, to accomplish one or more of the purposes of agriculture research, education, and extension, subject to the varying conditions and needs of States.

Therefore, in carrying out its review, the peer review panel shall take into account the following factors.

For Standard Research Grants, Strengthening Standard Research Project Grants, Postdoctoral Fellowships, New Investigator Awards, Integrated Project Grants and Bridge Grants:

1. Scientific merit of the application for research, extension and/or education, including:

- (a) Novelty, innovation, uniqueness, and originality;
- (b) Where model systems are used, ability to transfer knowledge gained from these systems to organisms of importance to U.S. agriculture;
- (c) Conceptual adequacy of the research, extension, and education components, as applicable;
- (d) Clarity and delineation of objectives;
- (e) Adequacy of the description of the undertaking and suitability and feasibility of methodology;
- (f) Demonstration of feasibility through preliminary data and/or, for postdoctoral fellowships, publication record of the mentor; and
- (g) Probability of success of project.

2. Qualifications of proposed project personnel and adequacy of facilities, including:

- (a) Qualifications of applicant (individual or team) to conduct the proposed project, including performance record and potential for future accomplishments (for Postdoctoral Fellowship applications, this applies to the mentor as well as to the postdoctoral applicant);
- (b) Demonstrated awareness of previous and alternative approaches to the problem identified in the application;
- (c) Institutional experience and competence in subject area; and
- (d) Adequacy of available or obtainable support personnel, facilities, and instrumentation.

3. Planning and administration of the proposed project, including:

- (a) Time allocated for systematic attainment of objectives; and

(b) For multi-institutional and integrated projects, planned administration of the proposed project and its maintenance, partnerships, collaborative efforts, evaluation and monitoring efforts, and the planned dissemination of information over the duration of the project.

4. Relevance of the application to improvements in and sustainability of U.S. agriculture, the environment, and rural communities, including:

(a) Documentation that the research, extension, and/or education activities are directed toward current or likely future issues or priority areas identified in this document;

(b) For integrated activities, evident linkage of research, extension, and education functions, as appropriate; and

(c) For integrated activities, evidence of involvement of stakeholders and/or communities of interest.

In addition to the application criteria above, applications eligible for Bridge Grant support will be judged based on the potential that further funding will sustain and enhance important collaborations and activities that might lead to future program success or success in obtaining other grants.

Postdoctoral fellowship applications also will be evaluated on the quality of the training environment, including:

(a) Documentation that arrangements have been made with an established investigator to serve as mentor;

(b) Documentation that arrangements have been made for the necessary facilities, space, and materials to conduct the proposed research; and

(c) Potential for the postdoctoral fellow to initiate an independent research program.

For Conference Applications:

1. Relevance of the proposed conference to agriculture and food systems in the U.S. and appropriateness of the conference in fostering scientific exchange;

2. Qualifications of organizing committee and appropriateness of invited speakers to topic areas being covered;

3. Uniqueness and timeliness of the conference; and

4. Appropriateness of budget request.

For Research Career Enhancement Awards, Equipment Grants, and Seed Grants:

- 1. The merit of the proposed activities or research equipment as a means of enhancing the research capabilities and competitiveness of the applicant and/or institution;**
- 2. The applicant's previous research experience and background;**
- 3. The appropriateness of the proposed activities or research equipment for the goals proposed; and**
- 4. Relevance of the project to long-range improvements in and sustainability of U.S. agriculture, the environment, and rural communities.**

C. Conflicts of Interest and Confidentiality

During the peer evaluation process, extreme care will be taken to prevent any actual or perceived conflicts of interest that may impact review or evaluation. For the purpose of determining conflicts of interest, the academic and administrative autonomy of an institution shall be determined by reference to the current Higher Education Directory, published by Higher Education Publications, Inc., 6400 Arlington Boulevard, Suite 648, Falls Church, VA 22042. Phone: (703) 532-2300. Web site: <http://www.hepinc.com>.

Names of submitting institutions and individuals, as well as application content and peer evaluations, will be kept confidential, except to those involved in the review process, to the extent permitted by law. In addition, the identities of peer reviewers will remain confidential throughout the entire review process. Therefore, the names of the reviewers will not be released to applicants.

PART VI—AWARD ADMINISTRATION

A. General

Within the limit of funds available for such purpose, the awarding official of CSREES shall make grants to those responsible, eligible applicants whose applications are judged most meritorious under the procedures set forth in this RFA. Note that the project need not be initiated on the grant effective date, but as soon thereafter as practical so that project goals may be attained within the funded project period. All funds granted by CSREES under this RFA shall be expended solely for the purpose for which the funds are granted in accordance with the approved application and budget, the regulations, the terms and conditions of the award, the applicable Federal cost principles, and the applicable Department's assistance regulations (e.g., parts 3015 and 3019 of 7 CFR). The total period for which a grant is awarded (including all funded and no-cost time extensions) may not exceed 5 years.

B. Organizational Management Information

Specific management information relating to an applicant shall be submitted on a one-time basis as part of the responsibility determination prior to the award of a grant identified under this RFA, if such information has not been provided previously under this or another CSREES program. CSREES will provide copies of forms recommended for use in fulfilling these requirements as part of the preaward process. Although an applicant may be eligible based on its status as one of these entities, there are factors that may exclude an applicant from receiving Federal financial and nonfinancial assistance and benefits under this program (e.g., debarment or suspension of an individual involved or a determination that an applicant is not responsible based on submitted organizational management information).

C. Award Notice

The award document will provide pertinent instructions and information shall include at a minimum the following:

1. Legal name and address of performing organization or institution to whom the Administrator has awarded a grant under the terms of this RFA;
2. Title of project;
3. Name(s) and institution(s) of PDs chosen to direct and control approved activities;
4. Identifying grant number assigned by the Department;
5. Project period, specifying the amount of time the Department intends to support the project without requiring recompetition for funds;
6. Total amount of Departmental financial assistance approved by the Administrator during the project period;
7. Legal authority(ies) under which the grant is awarded;
8. Appropriate Catalog of Federal Domestic Assistance (CFDA) number;
9. Applicable award terms and conditions (see <http://www.csrees.usda.gov/business/awards/awardterms.html>) to view CSREES award terms and conditions);
10. Approved budget plan for categorizing allocable project funds to accomplish the stated purpose of the grant award; and
11. Other information or provisions deemed necessary by CSREES to carry out its respective granting activities or to accomplish the purpose of a particular grant.

D. Administrative and National Policy Requirements

Several Federal statutes and regulations apply to grant applications considered for review and to project grants awarded under this program. These include, but are not limited to:

7 CFR Part 1, subpart A—USDA implementation of the Freedom of Information Act.

7 CFR Part 3—USDA debt collection regulations.

7 CFR Part 15, subpart A—USDA implementation of Title VI of the Civil Rights Act of 1964, as amended.

7 CFR Part 331 and 9 CFR Part 121—USDA implementation of the Agricultural Bioterrorism Protection Act of 2002.

7 CFR Part 3015—USDA Uniform Federal Assistance Regulations, implementing OMB directives (i.e., OMB Circular Nos. A-21 and A-122) and incorporating provisions of 31 U.S.C. 6301-6308 (formerly the Federal Grant and Cooperative Agreement Act of 1977, Pub. L. No. 95-224), as well as general policy requirements applicable to recipients of Departmental financial assistance.

7 CFR Part 3017—USDA implementation of Governmentwide Debarment and Suspension (Nonprocurement) and Governmentwide Requirements for Drug-Free Workplace (Grants).

7 CFR Part 3018—USDA implementation of Restrictions on Lobbying. Imposes prohibitions and requirements for disclosure and certification related to lobbying on recipients of Federal contracts, grants, cooperative agreements, and loans.

7 CFR Part 3019—USDA implementation of OMB Circular No. A-110, Uniform Administrative Requirements for Grants and Other Agreements With Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations.

7 CFR Part 3052—USDA implementation of OMB Circular No. A-133, Audits of States, Local Governments, and Non-profit Organizations.

7 CFR Part 3407—CSREES procedures to implement the National Environmental Policy Act of 1969, as amended.

29 U.S.C. 794 (section 504, Rehabilitation Act of 1973) and 7 CFR Part 15b (USDA implementation of statute)—prohibiting discrimination based upon physical or mental handicap in Federally assisted programs.

35 U.S.C. 200 et seq.—Bayh-Dole Act, controlling allocation of rights to inventions made by employees of small business firms and domestic nonprofit organizations, including universities, in Federally assisted programs (implementing regulations are contained in 37 CFR Part 401).

E. Expected Program Outputs and Reporting Requirements

Grantees are required to submit annual and summary evaluation reports via the CSREES Current Research Information System (CRIS). CRIS is an electronic, Web-based inventory system that facilitates both grantee submissions of project outcomes and public access to information on Federally-funded projects.

If a project is funded, beginning in the first year of funding, at least one member of the project team will be required to attend annual investigator meetings. Reasonable travel expenses may be claimed as part of the project budget (see Part IV, B., 1., 13.).

PART VII—AGENCY CONTACTS

Applicants and other interested parties are encouraged to contact the NRI: telephone, (202) 401-5022; fax, (202) 401-6488; e-mail, nricgp@csrees.usda.gov. Specific questions pertaining to technical matters may be directed to the appropriate National Program Leader listed in Part II, E.

PART VIII—OTHER INFORMATION

A. Access to Review Information

Copies of reviews, not including the identity of reviewers, and a summary of the panel comments will be sent to the applicant PD after the review process has been completed.

B. Use of Funds; Changes

1. Delegation of Fiscal Responsibility

Unless the terms and conditions of the grant state otherwise, the grantee may not in whole or in part delegate or transfer to another person, institution, or organization the responsibility for use or expenditure of grant funds.

2. Changes in Project Plans

(a) The permissible changes by the grantee, PD(s), or other key project personnel in the approved project grant shall be limited to changes in methodology, techniques, or other similar aspects of the project to expedite achievement of the project's approved goals. If the grantee or the PD(s) is uncertain as to whether a change complies with this provision, the question must be referred to the Authorized Departmental Officer (ADO) for a final determination. The ADO is the signatory of the award document, not the program contact.

(b) Changes in approved goals or objectives shall be requested by the grantee and approved in writing by the ADO prior to effecting such changes. In no event shall

requests for such changes be approved which are outside the scope of the original approved project.

(c) Changes in approved project leadership or the replacement or reassignment of other key project personnel shall be requested by the grantee and approved in writing by the ADO prior to effecting such changes.

(d) Transfers of actual performance of the substantive programmatic work in whole or in part and provisions for payment of funds, whether or not Federal funds are involved, shall be requested by the grantee and approved in writing by the ADO prior to effecting such transfers, unless prescribed otherwise in the terms and conditions of the grant.

(e) Changes in Project Period: The project period may be extended by CSREES without additional financial support, for such additional period(s) as the ADO determines may be necessary to complete or fulfill the purposes of an approved project, but in no case shall the total project period exceed five years. Any extension of time shall be conditioned upon prior request by the grantee and approval in writing by the ADO, unless prescribed otherwise in the terms and conditions of a grant.

(f) Changes in Approved Budget: Changes in an approved budget must be requested by the grantee and approved in writing by the ADO prior to instituting such changes if the revision will involve transfers or expenditures of amounts requiring prior approval as set forth in the applicable Federal cost principles, Departmental regulations, or grant award.

C. Confidential Aspects of Applications and Awards

When an application results in a grant, it becomes a part of the record of CSREES transactions, available to the public upon specific request. Information that the Secretary determines to be of a confidential, privileged, or proprietary nature will be held in confidence to the extent permitted by law. Therefore, any information that the applicant wishes to have considered as confidential, privileged, or proprietary should be clearly marked within the application. Such an application will be released only with the consent of the applicant or to the extent required by law. The original copy of an application that does not result in a grant will be retained by the Agency for a period of three years. Other copies will be destroyed. An application may be withdrawn at any time prior to the final action thereon.

D. Regulatory Information

For the reasons set forth in the final Rule-related Notice to 7 CFR part 3015, subpart V (48 FR 29114, June 24, 1983), this program is excluded from the scope of the Executive Order 12372 which requires intergovernmental consultation with State and local officials. Under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 35), the collections of information requirements contained in this Notice have been approved under OMB Document No. 0524-0039.

E. Application Disposition

When each peer review panel has completed its deliberations, the responsible program staff of the NRI will recommend that the project: (a) be approved for support from currently available funds or (b) be declined due to insufficient funds or unfavorable review.

The NRI reserves the right to negotiate with the PD and/or with the submitting organization or institution regarding project revisions (e.g., reductions in the scope of work), funding level, or period or method of support prior to recommending any project for funding.

An application may be withdrawn at any time before a final funding decision is made regarding the application; however, withdrawn applications normally will not be returned. One copy of each application that is not selected for funding (including those that are withdrawn) will be retained by the NRI for a period of three years. The remaining copies will be destroyed.

F. Materials Available on the Internet

The following are among the materials available on the NRI page (<http://www.csrees.usda.gov/funding/nri/nri.html>).

1. NRI 2006 Request for Applications

2. CSREES Application Forms

3. NRI Abstracts of Funded Research

4. NRI Annual Reports

G. Electronic Subscription to NRI Documents

The mail server “nri-epubs” is no longer available

H. Definitions

For the purpose of this program, the following definitions are applicable:

Administrator means the Administrator of the Cooperative State Research, Education, and Extension Service (CSREES) and any other officer or employee of the Department to whom the authority involved is delegated.

Authorized departmental officer means the Secretary or any employee of the Department who has the authority to issue or modify grant instruments on behalf of the Secretary.

Authorized organizational representative means the president, director, or chief executive officer or other designated official of the applicant organization who has the authority to commit the resources of the organization.

Department or USDA means the United States Department of Agriculture.

Education Activity means formal classroom instruction, laboratory instruction, and practicum experience in the food and agricultural sciences and other related matters such as faculty development, student recruitment and services, curriculum development, instructional materials and equipment, and innovative teaching methodologies.

Extension Activity means an act or process that delivers science-based knowledge and informal educational programs to people outside of the traditional classroom, enabling them to make practical decisions.

Fundamental research is research that tests scientific hypotheses and provides basic knowledge that enables advances in applied research and from which major conceptual breakthroughs are expected to occur.

Grant means the award by the Secretary of funds to an eligible organization or individual to assist in meeting the costs of conducting, for the benefit of the public, an identified project that is intended and designed to accomplish the purpose of the program as identified in these guidelines.

Grantee means an organization designated in the grant award document as the responsible legal entity to which a grant is awarded.

Integrated means to bring the three components of the agricultural knowledge system (research, education, and extension) together around a problem area or activity.

Matching means that portion of allowable project costs not borne by the Federal Government, including the value of in-kind contributions.

Minority means Alaskan Native, American Indian, Asian-American, Black (African-American), Hispanic American, Native Hawaiian, or Pacific Islander. The Secretary will determine on a case-by-case basis whether additional groups qualify under this definition, either at the Secretary's initiative, or in response to a written request with supporting explanation (see Part III, B.).

Minority-serving institution means an academic institution whose enrollment of a single minority or a combination of minorities, as defined in this section, exceeds fifty percent of the total enrollment, including graduate and undergraduate applied research and full- and part-time students. (Applicants applying under this category should indicate the current total enrollment of the institution in a cover letter). An institution in this instance is an organization that possesses a significant degree of autonomy.

Mission-Linked Research is research on specifically identified agricultural problems which, through a continuum of efforts, provides information and technology that may be transferred to users and may relate to a product, practice or process.

Multidisciplinary project means research, education and extension projects in which investigators from two or more disciplines are collaborating closely. These collaborations, where appropriate, may integrate the biological, physical, chemical, or social sciences.

Peer review means an evaluation of a proposed project for scientific or technical quality and relevance performed by experts with the scientific knowledge and technical skills to conduct the proposed work or to give expert advice on the merits of an application.

Prior approval means written approval evidencing prior consent by an authorized departmental officer as defined above.

Project means the particular activity within the scope of the program supported by a grant award.

Project director means the single individual designated in the grant application and approved by the Secretary who is responsible for the direction and management of the project.

Project period means the period, as stated in the award document, during which Federal sponsorship begins and ends.

Research activity means a scientific investigation or inquiry which results in the generation of knowledge.

Secretary means the Secretary of Agriculture and any other officer or employee of the Department to whom the authority involved is delegated.

Small and mid-sized institutions for Integrated Projects are academic institutions with a current total enrollment of 15,000 or less including graduate and undergraduate and full- and part-time students and that are no higher than the 50th percentile of academic institutions funded by the National Research Initiative Competitive Grants Program in the past three years and are not within the top 100 Federally funded institutions (See Table 2 at the end of this document for an alphabetical listing of the most successful institutions). (Applicants applying under this category should indicate the current total enrollment of the institution in a cover letter.). An institution in this instance is an organization that possesses a significant degree of autonomy. Significant degree of autonomy is defined by being independently accredited as determined by reference to the current version of the *Higher Education Directory*, published by Higher Education Publications, Inc., 6400 Arlington Boulevard, Suite 648, Falls Church, Virginia 22042. (703-532-2300)

Small and mid-sized institutions for Research Projects are academic institutions with a current total enrollment of 15,000 or less including graduate and undergraduate and full- and part-time students. (Applicants applying under this category should indicate the current total enrollment of the institution in a cover letter.) An institution in this instance is an organization that possesses a significant degree of autonomy.

I. CSREES' Grants.gov Implementation Plans

Grants.gov is an internet web site for grant and other financial assistance information (e.g., allows grant seekers to find funding opportunities). It also serves to facilitate electronic transmission of information pertaining to grants and other financial assistance information (e.g., electronic application submission.)

In fiscal year (FY) 2006, CSREES will implement the SF-424 R&R (Research and Related) forms package (see 70 FR 9656, published in the Federal Register on February 28, 2005) along with CSREES Agency-specific forms and instructions to receive electronic applications for two programs through Grants.gov. *This RFA is not for either of those programs.* In addition, CSREES has selected a limited number of institutions to use Grants.gov for the submission of electronic applications for a variety of programs in FY 2006. CSREES expects to provide all applicants the option to electronically submit applications to all programs in FY 2007. For more information about CSREES' Grants.gov plans, including important announcements, program implementation, and detailed requirements, see the CSREES' web site, http://www.csrees.usda.gov/business/other_links/egov/egov.html, which will be updated as appropriate. It is suggested that this site be visited periodically for important updates.

Grants.gov is not available for the submission of applications in response to this RFA. See the section under Part IV titled, "Other Submission Requirements" for information about the format (i.e., hard copy or electronic) for the submission of proposals under this RFA.

J. DUNS Number

A Dun and Bradstreet (D&B) Data Universal Numbering System (DUNS) number is a unique nine-digit sequence recognized as the universal standard for identifying and keeping track of over 70 million businesses worldwide. A Federal Register notice of final policy issuance (68 FR 38402) requires a DUNS number in every application (i.e., hard copy and electronic) for a grant or cooperative agreement (except applications from individuals) submitted on or after October 1, 2003. Therefore, potential applicants should verify that they have a DUNS number or take the steps needed to obtain one. For information about how to obtain a DUNS number go to <http://www.grants.gov/RequestaDUNS>. Please note that the registration may take up to 14 business days to complete.

K. Required Registration for Grants.gov

The Central Contract Registry (CCR) is a database that serves as the primary Government repository for contractor information required for the conduct of business with the Government. This database will also be used as a central location for maintaining organizational information for organizations seeking and receiving grants from the Government. Such organizations must register in the CCR prior to the submission of applications via grants.gov (a DUNS number is needed for CCR registration). For information about how to register in the CCR visit <http://www.grants.gov>. Allow a minimum of 5 days to complete the CCR registration.

TABLE 1.

Use to Determine Eligibility for Strengthening Research Awards - Most Successful Universities and Colleges Receiving Federal Funds for Science and Engineering Research and Development in FY 2003

The following institutions are NOT eligible for equipment grants:

Baylor College of Medicine
Boston University
Brown University
California Institute of Technology
Carnegie-Mellon University
Case Western Reserve University
Colorado State University
Columbia University
Cornell University
CUNY Mount Sinai School of Medicine
Dartmouth College
Duke University
Emory University
Florida State University
Georgetown University
Georgia Institute of Technology
Harvard University
Indiana University Purdue University at Indianapolis
Iowa State University
Johns Hopkins University
Massachusetts Institute of Technology
Medical College of Wisconsin
Medical University of South Carolina
Michigan State University
New York University
North Carolina State University
Northwestern University
Ohio State University
Oregon Health Sciences University
Oregon State University
Pennsylvania State University
Princeton University
Purdue University
Rockefeller University
Rutgers, The State University of New Jersey
Scripps Research Institute
Stanford University

State University of New York at Stony Brook
Thomas Jefferson University
Tulane University
University Corporation for Atmospheric Research
University of Alabama Birmingham
University of Arizona
University of California Berkeley
University of California Davis
University of California Irvine
University of California Los Angeles
University of California San Diego
University of California San Francisco
University of California Santa Barbara
University of Chicago
University of Cincinnati
University of Colorado Boulder
University of Colorado Health Sciences Center
University of Connecticut
University of Florida
University of Georgia
University of Hawaii Manoa
University of Kentucky
University of Illinois Urbana-Champaign
University of Illinois Chicago
University of Iowa
University of Maryland Baltimore Prof School
University of Maryland College Park
University of Massachusetts Amherst
University of Massachusetts Medical School Worcester
University of Medicine and Dentistry of New Jersey
University of Miami
University of Michigan Ann Arbor
University of Minnesota Twin Cities
University of Missouri Columbia
University of New Mexico
University of North Carolina Chapel Hill
University of Pennsylvania
University of Pittsburgh
University of Rochester
University of South Florida
University of Southern California
University of Texas at Austin
University of Texas Health Science Center Houston
University of Texas Health Science Center San Antonio
University of Texas MD Anderson Cancer Center
University of Texas Medical Branch Galveston

University of Texas SW Medical Center Dallas
University of Utah
University of Vermont
University of Virginia
University of Washington
University of Wisconsin Madison
Utah State University
Vanderbilt University
Virginia Commonwealth University
Wake Forest University
Washington University
Wayne State University
Woods Hole Oceanographic Institute
Yale University
Yeshiva University, New York

Based on data from the table Federal obligations for science and engineering research and development to the 100 universities and colleges receiving the largest amounts, ranked by total amount received: in fiscal year 2003 of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions (National Science Foundation).

TABLE 2.

***Use to Determine Eligibility for Possible Waiver of Matching Funds
Requirement for Equipment Grants – Lowest One Third of Universities
and Colleges Receiving Federal Funds for Science and Engineering
Research and Development in FY 2002¹***

Abilene Christian U.	Cankdeska Cikana Community C.
Adelphi C.	Central CT State U.
Agnes Scott C.	Central GA Technical C.
AK Pacific U.	Chaminade U. Honolulu
Alamo Community C. District all campuses	Chapman U.
Albany C. of Pharmacy	Chief Dull Knife C.
Albany State U.	City Colleges Chicago all campuses
Albion C.	Claremont McKenna C.
Alderson-Broadus C.	Coe C.
Alma C.	Colby C.
American Indian Higher Ed. Consortium	Columbus State U.
American River C.	Contra Costa Community C.
Andrews U.	Cooper Union
Angelo State U.	Coppin State C.
Appalachian State U.	CUNY
AR Tech U.	CUNY Medgar Evers C.
Ashland U.	Daytona Beach Community C.
Assumption C.	Delta State U.
Augustana C. (Rock Island, IL)	Dillard U.
Austin C.	Dowling C.
Avila U.	Drake U.
Bank Street C. of Ed.	D'Youville C.
Beloit C.	Earlham C. and Earlham School of Religion
Bentley C.	Eastern WA U.
Berry C.	Eckerd C.
Bethel C. and Seminary all campuses	Emerson C.
Bethune Cookman C.	Emporia State U.
Bevill State Community C. Walker Campus	Estrella Mountain Community C.
Birmingham Southern C.	Evergreen State C.
Bloomsburg U. PA	Fairmont State C.
Bradley U.	Five Colleges, Inc.
Brenau U.	FL Gulf Coast U.
Butler U.	Francis Marion U.
C. of Menominee Nation	Frederick Community C.
C. of St. Catherine	Frostburg State U.
C. of St. Scholastica	Ft. Berthold Community C.
C. of the Holy Cross	Ft. Hays State U.

C. Wooster
Cameron U.
Canisius C.
Gem National Consortium for Graduate Degrees for
Minorities in Engineering and Science, Inc.

Geneva C.
Gordon-Conwell Theological Seminary
Goucher C.
Grand Valley State U.
Grinnell C.
Gulf Coast Ed. Initiative Consortium, Inc.
Gustavus Adolphus C.
Hartwick C.
Haskell Indian Nations U.
Hostos Community C. CUNY
IL Wesleyan U.
Immaculata U.
Indiana U. PA all campuses
Institute of American Indian and AK Native
Culture and Arts Development
International American U. PR
Isim U.
Jacksonville State U.
Jacksonville U.
Jarvis Christian C.
Judson C. (Elgin, IL)
Juniata C.
Kettering U.
Keuka C.
Lac Courte Oreilles Ojibwa Community C.
Lake Forest C.
Lamar U.
Lane C.
Lawrence Technological U.
Lawson State Community C.
Le Moyne-Owen C.
Le Tourneau U.
Liberty U.
Los Angeles Community C.
Loyola C.
Loyola U. of New Orleans
Lubbock Christian U.
Luther C.
Lynchburg C.
Lyon C.

Ft. Lewis C.
GA Perimeter C.
Gallaudet U.
Millsaps C.
MN State U. Moorhead
MN State Colleges & Universities
MS-AL Sea Grant Consortium
MT State U. Northern
Mt. Mercy C.
Muhlenberg C.
Niagara U.
NJ City U.
North GA C. and State U.
Northern MI U.
Northland C.
Northwest MO State U.
Northwestern C. (Orange City, IA)
Northwestern State U.
NY Institute of Technology all campuses
Occidental C.
Oklahoma City Community C.
Pacific Lutheran U.
Paine C.
Pasadena City C.
Paul Smith's C. of Arts and Sciences
Philadelphia U.
Phoenix C.
Pontifical Catholic U. PR, The
Prince George's Community C.
Radford U.
Ramapo C. NJ
Regis U.
Rhodes C.
Richard Stockton C. NJ
Rider U.
Roanoke C.
Rockhurst U.
Rocky Mountain C.
Rogue Community C.
Rollins C.
Rose-Hulman Institute of Technology
Rust C.
Salisbury U.
San Jacinto C.
Savannah State U.

MA Bay Community C.
 Macon State C.
 Mary Baldwin C.
 Marymount C. (Tarrytown, NY)
 McDaniel C.
 McPherson C.
 Medaille C.
 Medvance Institute
 Southeast MO State U.
 Southeastern OK State U.
 Southern CT State U.
 Southern IL U.
 Southwest FL C.
 Southwest MO State U.
 Southwestern Indian Polytechnic Institute
 Springfield C. (Springfield, MA)
 St. Anselm C.
 St. Francis C. (Brooklyn, NY)
 St. Joseph's C. (North Windham, ME)
 St. Mary's C. CA
 St. Mary's U. (San Antonio, TX)
 St. Norbert C.
 St. Paul Technical C.
 St. Peter's C.
 State U. West GA
 Stephens C.
 Sterling C. (Craftsbury Common, VT)
 Stillman C.
 SUNY C. Cortland
 SUNY C. Fredonia
 SUNY C. of Technology Alfred
 SUNY C. Oneonta
 SUNY C. Potsdam
 SUNY New Paltz
 SUNY Purchase C.
 Sweet Briar C.
 Talladega C.
 Taylor U. Upland
 Thomas More C.
 Trinity C. (Harford, CT)
 Trinity C. (Washington, DC)
 Tri-State U.
 TX A&M International U.
 TX A&M U. System Health Science Ctr.
 U. AR Monticello
 U. Central AR

Science & Engineering Alliance, Inc.
 Siena C.
 Simpson C. (Indianola, IA)
 Sisseton-Wahpeton Community C.
 Sistema Universitario Ana G. Mendez
 Sitting Bull C.
 Sojourner-Douglas C.
 South TX Community C.
 U. MD U. C.
 U. ME Farmington
 U. MT-Western, The
 U. NC Asheville
 U. New Haven
 U. of St. Thomas (Houston, TX)
 U. of the Sacred Heart
 U. of the South
 U. Puget Sound
 U. Scranton
 U. Southern CO
 U. TN Space Institute
 U. WI Stevens Point
 U. WI Stout
 U. WI Whitewater
 U.S. Military Academy
 Uniformed Services U. of the Health Sciences
 United Tribes Technical C.
 Universidad del Este
 Universidad del Turabo
 VA Union U.
 Valdosta State U.
 Wabash C.
 Washington and Lee U.
 Washington County Technical C.
 West Chester U. PA
 West TX A&M U.
 Western Carolina U.
 Western New England C.
 Western WI Technical C.
 Westmont C.
 Wheaton C. (Wheaton, IL)
 Whitworth C.
 WI Lutheran C.
 Widener U. all campuses
 Wilkes U.
 Willamette U.
 Winona State U.

U. Central OK
U. Charleston
U. Consortium for Geographic Information Science
U. Detroit Mercy
U. Evansville
U. of the Incarnate World

Winthrop U.
Xavier U.
Yavapai C.

Based on data from the table Federal obligations for science and engineering research and development to universities and colleges, ranked by total amount received, by agency: fiscal year 2002 Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions (National Science Foundation).

¹ University-administered foundations must contact CSREES' Competitive Programs Unit to determine their eligibility (see contact information on p. 136).

TABLE 3.

***Use to Determine Eligibility for Bridge Grants Most Successful
Universities and Colleges Receiving Federal and/or National Research
Initiative Funds***

Alabama A & M University*
Auburn University *
Baylor College of Medicine
Baylor University *
Boise State University *
Boston University
Brown University
California Institute of Technology
California State Polytechnic University *
Carnegie-Mellon University
Case Western Reserve University
City University of New York, City College*
Clemson University *
Colorado State University
Columbia University
Cornell University
CUNY Mount Sinai School of Medicine
Dartmouth College
Drew University*
Duke University
Emory University
Florida State University
Georgetown University
Georgia Institute of Technology
Harvard University
Illinois State University *
Indiana University Bloomington *
Indiana University Purdue University at Indianapolis
Iowa State University *
Johns Hopkins University
Kansas State University *
Louisiana State University *
Loyola University Chicago *
Massachusetts Institute of Technology
Medical College of Wisconsin
Medical University of South Carolina
Miami University*
Michigan State University
Michigan Technological University *

Mississippi State University
 Montana State University *
 New Mexico Institute of Mining and Technology *
 New Mexico State University *
 New York University
 North Carolina State University *
 North Dakota State University *
 Northern Arizona University *
 Northwestern University
 Ohio State University
 Oklahoma State University *
 Oregon Health Sciences University
 Oregon State University
 Pennsylvania State University
 Princeton University
 Purdue University
 Rice University *
 Rockefeller University
 Rutgers, The State University of New Jersey
 Scripps Research Institute
 South Dakota State University *
 Southern Illinois University Carbondale *
 Southwestern Indian Polytechnic Institute *
 Stanford University
 State University of New York at Albany *
 State University of New York at Stony Brook
 State University of New York College of Environmental Science & Forestry *
 Texas A&M University
 Texas Tech University *
 Thomas Jefferson University
 Tufts University *
 Tulane University
 University of Alabama Birmingham
 University of Alaska Fairbanks *
 University of Arizona
 University of Arkansas Fayetteville *
 University of California Berkeley
 University of California Davis
 University of California Irvine
 University of California Los Angeles
 University of California Riverside *
 University of California San Diego
 University of California San Francisco
 University of California Santa Barbara
 University of California Santa Cruz *
 University of Chicago

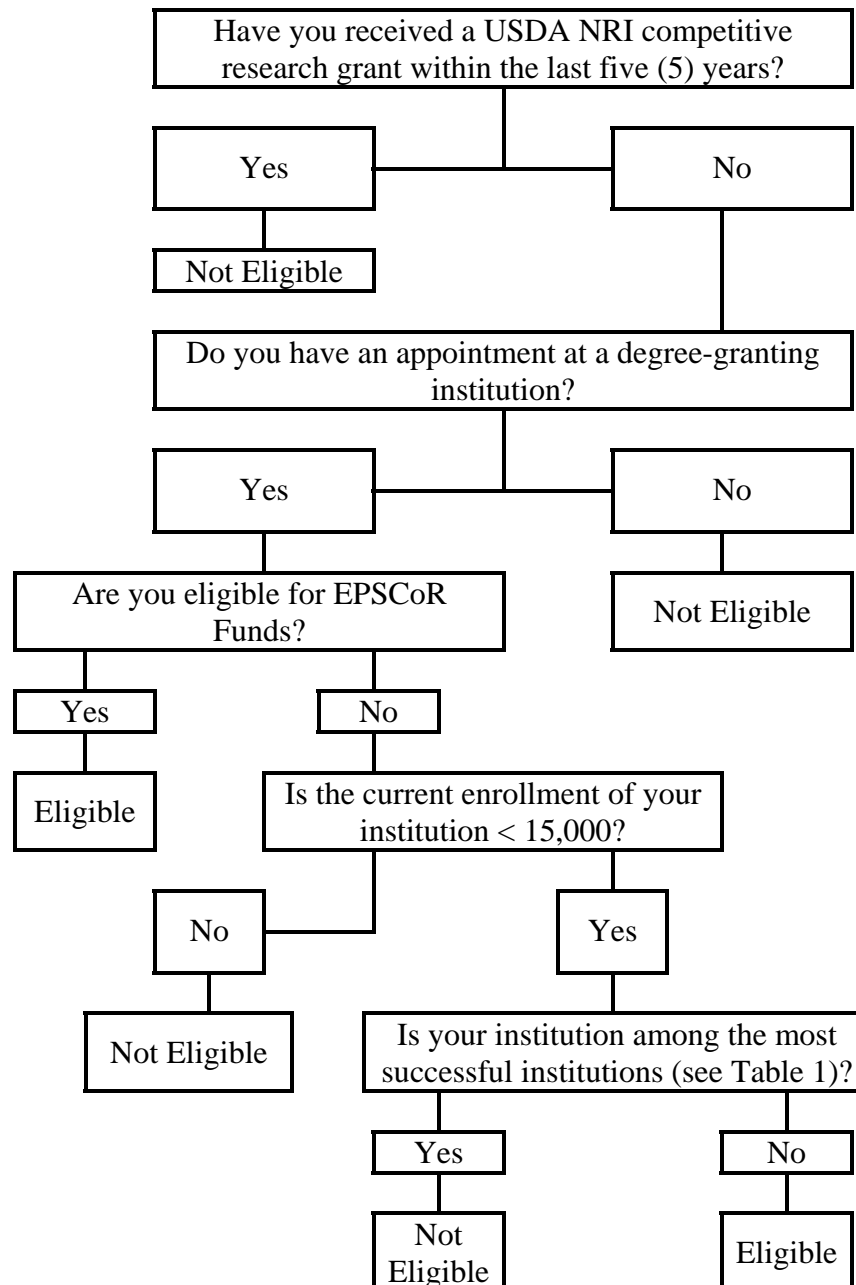
University of Cincinnati
University of Colorado Boulder
University of Connecticut
University of Delaware *
University of Florida
University of Georgia
University of Hawaii Manoa
University of Idaho *
University of Illinois Chicago
University of Illinois Urbana-Champaign
University of Iowa
University of Kansas
University of Kentucky
University of Maine Orono *
University of Maryland Baltimore Prof Sch
University of Maryland Biotechnology Institute *
University of Maryland College Park
University of Massachusetts Amherst *
University of Massachusetts Medical School Worcester
University of Medicine and Dentistry of New Jersey
University of Miami
University of Michigan Ann Arbor
University of Minnesota Twin Cities
University of Mississippi *
University of Mississippi Medical Center *
University of Missouri Columbia
University of Missouri Rolla *
University of Missouri St. Louis *
University of Montana *
University of Nebraska Lincoln *
University of Nebraska Kearney *
University of Nevada Las Vegas *
University of Nevada Reno *
University of New Hampshire *
University of New Mexico
University of North Carolina Chapel Hill
University of North Carolina Greensboro *
University of North Texas *
University of Notre Dame *
University of Oklahoma Health Sciences Center *
University of Oregon *
University of Pennsylvania
University of Pittsburgh
University of Rhode Island *
University of Rochester
University of South Florida

University of Southern California
University of Tennessee Knoxville *
University of Texas at Austin
University of Texas Health Science Center San Antonio
University of Texas Health Science Center Houston
University of Texas MD Anderson Cancer Center
University of Texas Medical Branch Galveston
University of Texas SW Medical Center Dallas
University of Utah
University of Vermont
University of Virginia
University of Washington
University of Wisconsin Madison
University of Wyoming *
Utah State University
Vanderbilt University
Virginia Commonwealth University
Virginia Institute of Marine Science *
Wake Forest University
Washington State University *
Washington University
Wayne State University
West Virginia University *
Woods Hole Oceanographic Institute
Yale University
Yeshiva University New York

Based on data from the table Federal obligations for science and engineering research and development to the 100 universities and colleges receiving the largest amounts, ranked by total amount received: in fiscal year 2003 of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions (National Science Foundation).

*Annotated institutions are not in the list for the most successful Federally funded, but were among the top 50th percentile of those funded by the National Research Initiative (Competitive, Special, and Facilities Research Grant Act (7 U.S.C. 450i(b))).

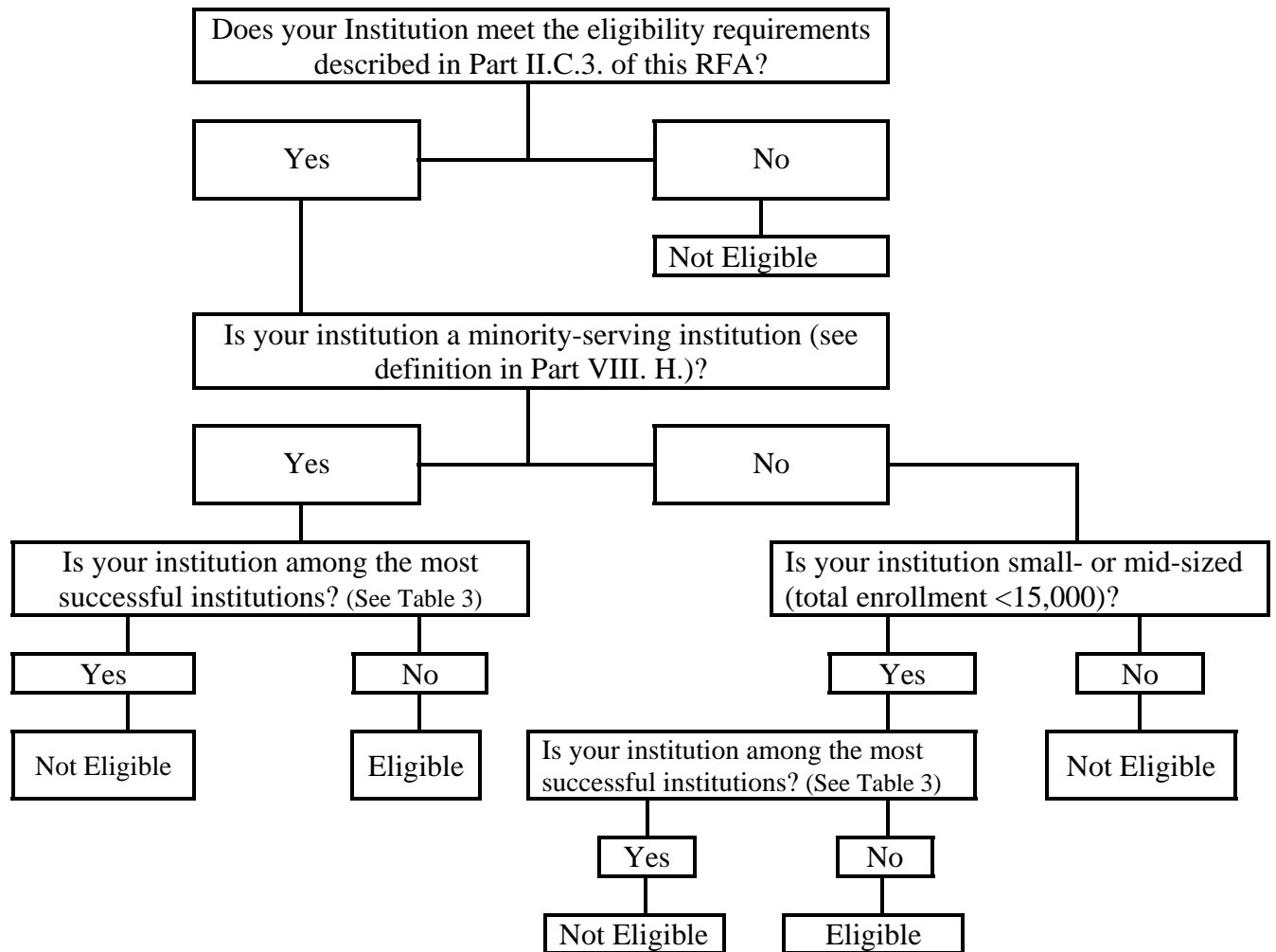
Flow Chart for Strengthening Research Award Eligibility (Seed Grants, Research Career Enhancement Awards, Strengthening Standard Awards; NOT Equipment Grants*)



*The only requirements for Equipment Grants are that the institution is degree granting and not among the Most Successful Universities and Colleges (see Table 1). For Strengthening Standard Awards, the Project Director may have received a Seed Grant, Research Career Enhancement Award, Equipment Grant, or Postdoctoral Fellowship.

FIGURE 2.

Flow Chart for Bridge Grant Eligibility



<p align="center">DIRECTORY OF NRI COMPETITIVE GRANTS PROGRAM STAFF AND APPLICABLE OFFICE OF EXTRAMURAL PROGRAM CONTACTS</p>

<p>Deputy Administrator – Anna Palmisano, Phone: (202) 401-1761, Fax: (202) 401-1782, E-mail: apalmisano@csrees.usda.gov</p>

<p>Education Advisor – Elbert Dickey, Phone (202) 720-2727, Fax: (202) 401-1782, Email: edickey@csrees.usda.gov</p>

<p>Science Advisor - Louis Pitelka, Phone (202) 720-1765, Fax: (202) 401-1782, Email: lpitelka@csrees.usda.gov</p>

<p>Integrated Programs Director - Deborah Sheely, Phone: (202) 401-1924, Fax: (202) 401-1782, E-mail: dsheely@csrees.usda.gov</p>

<p>Interim Research Director (<i>until January 2006</i>) – Debora Hamernik, Phone: (202) 401-4202, Fax: (202) 401-1782, E-mail: dhamernik@csrees.usda.gov</p>

<p>Research Director- Mark Poth, Phone: (202) 401-5022, Fax: (202) 401-6071, E-mail: mpoth@csrees.usda.gov</p>
--

<p>Office of Extramural Programs - Awards Management Branch - Administrative issues regarding award processing and post-award management. Phone: (202) 401-4342 or (202) 401-5050 Fax: (202) 401-6271 or (202) 401-3237</p>
--

<p>20.1 Animal Biosecurity Coordinated Agricultural Projects (CAP) – Peter Johnson, National Program Leader, Phone: (202) 401-1896, Fax: (202) 205-3641, E-mail: pjohnson@csrees.usda.gov</p>
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<p>20.2 Plant Biosecurity – National Program Leaders: Liang-Shiou Lin, Phone: (202) 401-5042, Fax: (202) 401-6488, E-mail: llin@csrees.usda.gov; John L. Sherwood, National Program Leader, Phone: (202) 690-1659, Fax: (202) 401-6488, E-mail: jsherwood@csrees.usda.gov</p>

22.1 Agricultural Plants and Environmental Adaptation- Gail McLean, National Program Leader, Phone: (202) 401-6060, Fax: (202) 401-6071, E-mail: gmclean@csrees.usda.gov

23.1 Managed Ecosystems – Diana Jerkins, National Program Leader, Phone: (202) 401-6996, Fax : (202) 401-6071, E-mail: djerkins@csrees.usda.gov

23.2 Microbial Genome Sequencing (offered in partnership with the National Science Foundation) - Ann Lichens-Park, National Program Leader, Phone: (202) 401-6460, Fax: (202) 401-6488, E-mail: apark@csrees.usda.gov

23.3 Microbial Observatories (offered in partnership with the National Science Foundation) – John L. Sherwood, National Program Leader, Phone: (202)690-1659, Fax: (202), E-mail: jsherwood@csrees.usda.gov

25.0 Soil Processes - Nancy Cavallaro, National Program Leader, Phone: (202) 401-5176, Fax: (202) 401-6071, E-mail: ncavallaro@csrees.usda.gov

26.0 Water and Watersheds- Mary Ann Rozum, National Program Leader , Phone: (202) 401-4533, Fax: (202) 401-1706, E-mail: mrozum@csrees.usda.gov

28.0 Air Quality – Ray Knighton, National Program Leader, Phone: (202) 401-6417, Fax: (202) 401-1706, E-mail: rknighton@csrees.usda.gov

31.0 Bioactive Food Components for Optimal Health - Etta Saltos, National Program Leader, Phone: (202) 401-5178, Fax: (202) 205-3641, E-mail: esaltos@csrees.usda.gov

31.5 Human Nutrition and Obesity – National Program Leaders: Etta Saltos, Phone: (202) 401-5178, Fax: (202) 205-3641, E-mail: esaltos@csrees.usda.gov; Susan Welsh, Phone: (202) 720-5544, Fax: (202) 720-9366, E-mail: swelsh@csrees.usda.gov

32.0 Food Safety – Chris Wozniak, National Program Leader, Phone: (202) 401-6020, Fax: (202) 401-6156, E-mail: cwozniak@csrees.usda.gov

32.1 Epidemiological Approaches for Food Safety - Mary Torrence, National Program Leader, Phone: (202) 401-6357, Fax: (202) 401-5179, E-mail : mtorrence@csrees.usda.gov

41.0 Animal Reproduction - Mark Mirando, National Program Leader, Phone: (202) 401-4336, Fax: (202) 205-3641, E-mail: mmirando@csrees.usda.gov

42.0 Animal Growth and Nutrient Utilization - Mark Mirando, National Program Leader, Phone: (202) 401-4336, Fax: (202) 205-3641, E-mail: mmirando@csrees.usda.gov

43.0 Animal Genome- National Program Leaders: Peter Burfening, Phone: (202) 401-5823, Fax: (202) 401-6488, E-mail: pburfening@csrees.usda.gov; Muquarrab Qureshi, Phone: (202)401-4895, Fax: (202) 401-1602, E-mail: mqureshi@csrees.usda.gov

44.0 Animal Protection – National Program Leaders: Peter Brayton, Phone: (202) 401-4399, Fax: (202) 401-6071, E-mail: pbrayton@csrees.usda.gov; Peter Johnson, Phone: (202) 401-1896, Fax: (202) 205-3641, E-mail: pjohnson@csrees.usda.gov

45.0 Functional Genomics of Agriculturally Important Microorganisms - Ann Lichens-Park, National Program Leader, Phone: (202) 401-6460, Fax: (202) 401-6488, E-mail: apark@csrees.usda.gov

51.2 Organismal and Population Biology of Arthropods and Nematodes - Mary Purcell-Miramontes, National Program Leader, Phone: (202) 401-5114, Fax: (202) 401-6488, E-mail: mpurcell@csrees.usda.gov

51.3 Suborganismal Biology and Genomics of Arthropods and Nematodes - Mary Purcell-Miramontes, National Program Leader, Phone: (202) 401-5114, Fax: (202) 401-6488, E-mail: mpurcell@csrees.usda.gov

51.8 Biology of Plant-Microbe Associations - Ann Lichens-Park, National Program Leader, Phone: (202) 401-6460, Fax: (202) 401-6488, E-mail: apark@csrees.usda.gov

51.9 Biology of Weedy and Invasive Species in Agroecosystems – Michael Bowers, National Program Leader, Phone: (202) 401-4510, Fax: (202) 401-1706, E-mail: mbowers@csrees.usda.gov

52.1 Plant Genome - Ed Kaleikau, National Program Leader, Phone: (202) 401-1931, Fax: (202) 202-401-6071, E-mail: ekaleikau@csrees.usda.gov

<p>52.2 Genetic Processes and Mechanisms of Agricultural Plants - Liang-Shiou Lin, National Program Leader, Phone: (202) 401-5042, Fax: (202) 401-6488, E-mail: llin@csrees.usda.gov</p>
<p>53.0 Developmental Processes of Agricultural Plants - Liang-Shiou Lin, National Program Leader, Phone: (202) 401-5042, Fax: (202) 401-6488, E-mail: llin@csrees.usda.gov</p>
<p>54.3 Agricultural Plant Biochemistry - Gail McLean, National Program Leader, Phone: (202) 401-6060, Fax: (202) 401-6488, E-mail: gmclean@csrees.usda.gov</p>
<p>61.0 Agricultural Markets and Trade – Pat Hipple, National Program Leader, Phone: (202) 401-2185, Fax: (202) 401-6071, E-mail: phipple@csrees.usda.gov</p>
<p>62.0 Rural Development – Pat Hipple, National Program Leader, Phone: (202) 401-2185, Fax: (202) 401-6071, E-mail: phipple@csrees.usda.gov</p>
<p>66.0 Agricultural Prosperity for Small and Medium-Sized Farms – National Program Leaders: S. (Suresh) Sureshwaran, Phone: (202) 720-7536, Fax: (202) 401-6070, E-mail: ssureshwaran@csrees.usda.gov; Diana Jerkins, Phone: (202) 401-6996, Fax: (202) 401-6488, E-mail: djerkins@csrees.usda.gov</p>
<p>71.1 Improving Food Quality and Value – National Program Leaders: Hongda Chen, Phone: (202) 401-6497, Fax: (202) 401-4888, E-mail: hchen@csrees.usda.gov; Ram Rao, Phone: (202) 401-6010, Fax: (202) 401-4888, E-mail: r Rao@csrees.usda.gov</p>
<p>71.2 Biobased Products and Bioenergy Production Research – Chavonda Jacobs-Young, National Program Leader; Phone: (202) 401-6188, Fax: (202) 401-6071, E-mail: cjacobs@csrees.usda.gov</p>
<p>75.0 Nanoscale Science and Engineering for Agriculture and Food Systems – Hongda Chen, National Program Leader, Phone: (202) 401-6497, Fax: (202) 401-4888, E-mail: hchen@csrees.usda.gov</p>

NRI DEADLINE DATES FOR FY 2006

The following fixed dates have been established for FY 2006 application submission deadlines within the National Research Initiative Competitive Grants Program, Cooperative State Research, Education, and Extension Service, United States Department of Agriculture. To be considered for funding in any fiscal year, applications must be RECEIVED BY Close of Business (5:00 P.M., Eastern Time) on the date listed below. When the deadline date falls on a weekend or Federal holiday, transmission must be made by the following business day.

Programs offered in any fiscal year depend on availability of funds and deadlines may be delayed due to unforeseen circumstances. Consult the NRI home page (<http://www.csrees.usda.gov/funding/nri/nri.html>) for up-to-date information.

Deadline	Code	Program
November 30, 2005	41.0	Animal Reproduction
December 1, 2005	52.2	Genetic Processes and Mechanisms of Agricultural Plants
December 1, 2005	71.1	Improving Food Quality and Value
December 6, 2005	32.0	Food Safety
December 6, 2005	32.1	Epidemiological Approaches for Food Safety
December 8, 2005	23.1	Managed Ecosystems
December 8, 2005	66.0	Agricultural Prosperity for Small and Medium-Sized Farms
December 13, 2005	31.0	Bioactive Food Components for Optimal Health
December 15, 2005	44.0	Animal Protection
December 16, 2005	51.2	Organismal and Population Biology of Arthropods and Nematodes
December 16, 2005	51.8	Biology of Plant-Microbe Associations
January 10, 2006	22.1	Agricultural Plants and Environmental Adaptation
January 12, 2006	71.2	Biobased Products and Bioenergy Production
January 19, 2006	25.0	Soil Processes
January 19, 2006	26.0	Water and Watersheds
January 19, 2006	75.0	Nanoscale Science and Engineering for Agriculture and Food Systems
February 1, 2006	62.0	Rural Development
February 7, 2006	53.0	Developmental Processes of Agricultural Plants
February 7, 2006	54.3	Agricultural Plant Biochemistry
February 15, 2006	51.9	Biology of Weedy and Invasive Species in Agroecosystems
February 15, 2006	52.1	Plant Genome
March 1, 2006	51.3	Suborganismal Biology and Genomics of Arthropods and Nematodes
May 17, 2006	42.0	Animal Growth and Nutrient Utilization
June 15, 2006	20.2	Plant Biosecurity

June 15, 2006	28.0	Air Quality
June 15, 2006	31.5	Human Nutrition and Obesity
June 15, 2006	43.0	Animal Genome
October 31, 2006	20.1	Animal Biosecurity Coordinated Agricultural Projects

The following fixed dates have been established for the FY 2006 letter of intent deadlines within the National Research Initiative Competitive Grants Program, Cooperative State Research, Education, and Extension Service, United States Department of Agriculture. To be considered for funding in any fiscal year, letters **must be RECEIVED BY Close of Business (5:00 P.M., Eastern Time)** on the date listed below. When the deadline date falls on a weekend or Federal holiday, transmission must be made by the following business day.

Deadline	Code	Program
December 16, 2005	51.9	Biology of Weedy and Invasive Species in Agroecosystems

CHECKLIST

All applications submitted under the NRI must contain the applicable elements outlined in these guidelines. The following checklist has been prepared to assist in ensuring that the application is complete and in the proper order prior to mailing:

◆ Proposal Cover Page (Form CSREES-2002)

Have all blocks been completed?

Have all PDs and the AOR (when required) signed the form?

Does one copy contain pen-and-ink signatures?

Have you included a telephone number where a message may be left for you?

◆ Table of Contents

Are page numbers included for each item?

◆ Project Summary (Form CSREES-2003)

Has the Project Summary been included on the form?

Do the names and institutions of all PDs appear on the form, or on an attached page?

Does the Project Summary include research, education, and/or extension objectives, as appropriate?

Has a CSREES goal been identified in the Project Summary?

If an integrated project is being proposed, is this indicated in the Project Summary?

Does the Project Summary fit within the designated box on the form?

Has the appropriate "Proposal Type" box been checked?

◆ Response to Previous Review (for resubmissions and resubmitted applications)

Has the application been clearly and meaningfully revised and are the revisions briefly described? Are comments from the previous review addressed?

◆ Project Description

Is the project fully described?

If a renewal application, is a clearly marked progress report included?

Does this section adhere to the format and page limitations?

Does this section begin as page 1, as specified?

◆ References to Project Description

Are all references cited?

Are all citations referenced?

Do all citations contain a title, the names of all authors, and are they in accepted journal format?

◆ Facilities and Equipment

Have you given a description of your facilities and equipment, sufficient to indicate that you will be able to carry out this project?

◆ Key Personnel

(Vitae and Publication Lists) Are vitae included for all PDs, collaborators, and other senior personnel? Is the publication list complete and limited to the last four years?

◆ Documentation from Collaborator(s), Scientific Mentor, or Host Institution (where appropriate)

◆ Conflict of Interest List (Form CSREES-2007)

Has a list been completed for each person who must submit a C.V.? Does the list include the four categories as appropriate?

◆ Results from Prior NRI Support (if appropriate)

◆ Budget (Form CSREES-2005)

Are annual and summary budgets included?

◆ Budget Narrative

Are budget items individually justified?

◆ Matching (if required)

◆ Current and Pending Support (Form CSREES-2005)

Have all current and pending projects been listed and summarized, **including this one**, for each PD listed on the Proposal Cover Page (Form CSREES-2002)?

◆ Assurance Statement (Form CSREES-2008, where applicable)

Has the project been approved by necessary IRB(s)?
Has the form been signed by the AOR (where required)?

◆ NEPA (Form CSREES-2006)

Has the NEPA form been completed and included?

◆ Appendices to Project Description

Are they limited to 2 (as described in the instructions)?

◆ General

Have you included the Personal Data on Project Director(s) (Page B of Form CSREES-2002) **only** on the original application? Have you contacted the appropriate National Program Leader if you have questions about the suitability of the proposed work? Does the application conform to all format and page limitations and deadline requirements? Are there an original and 14 copies (except for applications for Research Career Enhancement Awards (Sabbatical Awards), Equipment Grants, and Seed Grants, which require an original and 10 copies) of the application? Are all copies complete?_____

**UNITED STATES DEPARTMENT OF AGRICULTURE
COOPERATIVE STATE RESEARCH, EDUCATION, AND EXTENSION SERVICE
NATIONAL RESEARCH INITIATIVE COMPETITIVE GRANTS PROGRAM**

TABLE OF CONTENTS

To be placed immediately after the Proposal Cover Page (Form CSREES-2002)

Section	Total # of Pages in Section	Page #
1. Proposal Cover Page (Form CSREES-2002)	1	
2. Table of Contents	1	this page
3. Project Summary (Form CSREES-2003)	1	
4. Response to Previous Review (for resubmitted applications)	1	i
5. Project Description (see instructions for page limitations)		1
6. References to Project Description		
7. Facilities and Equipment		
8. Key Personnel (vitae and publications list)		
9. Collaborative Arrangements (including letters of support)		
10. Conflict of Interest List(s) (Form CSREES-2007)		
11. Results from Prior NRI Support (If applicable)		
12. Budget (Form CSREES-2004)		
13. Budget Narrative		
14. Matching (if required)		
15. Current and Pending Support (Form CSREES-2005)		
16. Assurance Statements (Form CSREES-2008)	1	
17. NEPA Form (Form CSREES-2006)	1	
18. Appendices to Project Description (see instructions)		
19. Personal Data on Project Director(s) (Page B of Form CSREES-2002) (submit only with original copy of application)		